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Theorization and Measurement of Memorable Tourism Experiences at Heritage Destinations (2019–2023): A Systematic Literature Review

By

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Abstract

By systematically mapping, analyzing and synthesizing a comprehensive body of scholarly works, this paper aims to trace the trajectory of models and theories that have shaped the discourse on memorable experience across multitude tourism literature and offers insights for future research prospects. To this end, high impact journal articles published from January 1st, 2019 to November 10th, 2023 were scanned from the electronic databases using the combination of keywords: "memorable tourism" OR "tourism experience" AND "memorable tourism experience". Following the screening, selection and synthesizing processes, 15 original full-text articles were included for the final descriptive analysis. The analysis results revealed that the majority of the scholars were focused still on conceptualizing frameworks and theories of memorable experiences; largely neglects negative experiences; uneven geographical distribution of publication (global perspective, followed by China); and most studies employed quantitative approach. Acquainted to the gaps identified, recommendations should include a more thoughtful application of memorable experiences models and theories, a focus on context-based study, consideration of both positive and negative dimensions, mitigation of self-report bias, applying mixed approach, and incorporation of both demand and supply perspectives. Eventually, this systematic literature review (SLR) aims to prompt a paradigm shift towards a more context-oriented conceptualization of tourism experiential dimensions, advocating for a more nuanced understanding beyond the current holistic approach about the subject, mainly heritage destinations that entails different dimensions.

Keywords: *Determinants; Memorable Tourism Experience; Models; Theories; Tourism Experience*

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1. Introduction

Tourism industry has undergone significant transformation, and principally the conceptualization of memorable experience has been at the forefront of scholarly inquiry. This systematic literature review (SLR) endeavors to provide a comprehensive overview of the evolution of models and theories related to tourism experiential, shedding light on the changing perspectives and paradigms that have influenced study in this domain. This delves into the historical progression of research on memorable experience, outlining seminal works and pivotal moments that have shaped the development of conceptual frameworks and theories in this field. Important models, their theoretical underpinnings and contributions to the understanding of the phenomenon are discussed, highlighting shifts and advancements over time.

Tourism experience is an individual's subjective evaluation and undergoing (affective, behavioral and cognitive) of events related to their tourism activities before, during and after the trip (Tung & Ritchie, 2011). Tourists' experiences in a given destination have consistently been shown to shape their memories of the visit (Wang et al., 2020). Because tourists seek authentic, rewarding, meaningful, multisensory and transformative experiences when visiting tourism destinations (Chirakranont & Sakdiyakorn, 2022). Therefore, the best way for tourism businesses success is to facilitate experiences that stand out in the minds of visitors and thereby encourage them for the future behavioral revisit intention (J. H. Kim, 2014; J. H. Kim et al., 2012).

What visitors remember about their travel and how to recall these memories are significant factors in making the future trip decisions (Tung & Ritchie, 2011) due to memory plays essential role in understanding the individuals' recall of tourism experiences (H. Kim et al., 2021). In addition, tourist experience is a complex amalgamation of distinctly subjective components that shape tourists' emotions and attitudes towards their visit (Chen et al., 2020). While some factors depend on the destination-related aspects, other factors depend on tourist's own need, desire and motivation (Wang et al., 2020). MTE is tourism experience positively recalled and remembered after the event occurred (J. H. Kim et al., 2012). Thus, tourists with positive memorable experiences are likely to revisit the same tourism destinations (Coudounaris & Sthapit, 2017), develop attachment to the destination (Tsai, 2016), experience subjective well-being (Sthapit et al., 2019) and novel features are more likely to be remembered (Skavronskaya et al., 2020).

2. Rationale

Being a multitude concept, there is little agreement on the theorization and measurement of memorable tourism experience (Bigne et al., 2020). Memorable tourism experience does not necessarily mean positive experience (H. Kim et al., 2021) and the degree of remembering varies depending on the individual's previous encounters, even with the same tourism providers (J. H. Kim, 2017). Tung & Ritchie (2011) suggested four key dimensions of memorable tourism experience: affection, expectation, consequentiality and recollection; in a later study, the same scholars developed five qualities of memorable tourism experience: identity formation, family milestones, relationship development, nostalgia reenactment, and freedom pursuits. Upon Tung & Ritchie's (2011) endeavor, J. H. Kim et al. (2012) advanced it into seven quantifiable memorable tourism experience scales, namely hedonism, refreshment, local culture, meaningfulness, knowledge, involvement and novelty.

Likewise, Chandralal et al. (2015) investigated memorable tourism experience in the travel blog

narratives and discovered seven experiential topics: local people, life and culture, personally significant experiences, shared experiences, perceived novelty, perceived serendipity, professional guides and tour operator services, and affective emotions. Coelho et al. (2018) also found a three-dimension memorable tourism experience (personal, relational, and environmental) and three stages of memorable tourism experience formation (ambiance, socialization, and emotions and reflection).

Therefore, the extant memorable tourism experience scales fail to adequately capture what makes tourism experience memorable (Tung & Ritchie, 2011); and there is also variation in research settings (Sthapit, Björk, & Coudounaris, 2022; Zhang et al., 2018), and sampling design (Sthapit et al., 2019). Studies on the cohesive and the latest synthesis of the extant body of knowledge on memorable tourism experience remain incongruent, inconclusive, fragmented, and constructs are often subjective in nature and lack a structured direction (Coelho et al., 2018; Seyfi et al., 2020; Sthapit & Jiménez-Barreto, 2018).

Additionally, memorable tourism experience suggested by J. H. Kim et al. (2012) and the subsequent studies on the domain do not sufficiently address the experiences of cultural tourists as a separate and growing marketing segmentation (Seyfi et al., 2020). Seyfi et al. (2020) thus recommended a theoretical model of memorable cultural tourism experiences that showed there is no theoretical agreement as to what constitutes the concept of memorable tourism experience by numerous scholars. Even the terms 'memorable tourism experience' and 'tourism experiences' are two abstractions that are interrelated, yet different in connotation and extension (Zhang et al., 2018).

The majority of the studies principally focused on measuring the positive dimension of memorable tourism experience (H. Kim et al., 2021). Scholars mainly tended to conceptualize memorable tourism experience principally as a positive phenomenon and negative experience remained largely unexplored though both positive and negative experiences were concurrently attempted by Sthapit et al. (2020).

Regardless of such endeavors, models and theories recommended on memorable tourism experience scales by J. H. Kim et al. (2012) and the subsequent scholars have based on the generic views, insufficient samples and cases that may influence the generalizability of the findings. Therefore, there is a need to generate trustworthy conclusion from the latest SLR of memorable tourism experience by ensuring appropriate methodological and ethical consideration to provide a solid foundation and suggest directions for future research prospects or to fill the gap and identify what has already been done, capture key lessons learned, and identify directions for future study (Kilubi, 2016).

Applying Mnemonic SPICE (setting, perspective, intervention, comparison and evaluation) protocol, which is appropriate in social sciences to frame the research question, the principal research question for this SLR is: What are the basic frameworks and theoretical underpinnings in the conceptualization and theorization of memorable experience at heritage destinations?

3. Objective

By analyzing and synthesizing a comprehensive body of scholarly works, this paper aims to systematically trace the trajectory of conceptual frameworks and theories that have shaped the discourse on memorable experience at heritage destinations conceptualization across multitude tourism literature and offers insights for future research prospects.

4. Methodology

SLR is a research method used to identify, appraise and synthesize the body of scientific literature by defining the research question, preparing the search strategy, performing the search, selecting articles, extracting and synthesizing data. Therefore, systematic search across scholarly databases is conducted, utilizing the predefined inclusion and exclusion criteria.

To scrutinize the state-of-the-art review of memorable tourism experiences, SLR was adapted as it helps to systematically map what is known and identifies the knowledge gaps, synthesis and integrate the extant body of knowledge (Pickering et al., 2014). SLR aims to answer questions; seek, retrieve and systematically organize results of the research; reduce publication, selection, and other bias; evaluate the research quality in the line of research questions; synthesize the results of review explicitly; increase accessibility of knowledge database; identify gaps and update the existing body of knowledge; recommend future research; and publish all phases of review in the report to allow critical evaluation and replication (Carole Torgerson, 2003).

The following five-step processes (framing review aims and questions; identifying search terms, databases, and selection criteria; searching databases, screening search outcomes, finetuning exclusion and inclusion criteria; extracting relevant materials from eligible searched outcomes and structure summary of evidence; and interpreting, synthesizing and presenting findings) were adapted for this SLR paper that resembles the 15-stages developed by Pickering et al. (2014):

First, established the aims of this SLR, systematically trace the trajectory of conceptual frameworks and theories that have shaped the discourse on memorable tourism experience conceptualization and theorization across multitude tourism literature and offers insights for the future research prospects. Mapping the intellectual structure, analyzing and synthesizing the current landscapes published from January 1st, 2019 to November 10th, 2023 and scanned from electronic databases of ScienceDirect (187) and Taylor & Francis Online (191).

Second, to ensure comprehensiveness and be consistent with the review on high impact journal articles published on electronic databases were identified. The state of the art guidelines were followed to search, extract and analysis tourism literature (Snyder, 2019). Keywords designed in English and selected based on the relationships between memory process and three scanning keywords (“memorable tourism” OR “tourism experience” AND “memorable tourism experience”) were identified based on Boolean logic operators (AND, OR, NOT). Memorable tourism experiences and its related concepts were used in conjunction with tourism experiences and related concepts.

Third, to identify articles for review, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2009 protocol was applied (Moher et al., 2009). PRISMA 2009 statement is a set of guidelines or steps (Moher et al., 2009), which are useful for systematic literature reviews, critical literature analyses and meta-analyses. PRISMA uses a set of methods to systematically search articles for review. To identify the duplication and eliminate overlapping between databases, the articles were imported to excel and merged with the help of Mendeley desk top reference manager.

Fourth, analyzed the selected 15 high impact journal articles to systematically assess the current state of the body of knowledge and manually recorded details from each article in a codebook and accordingly described the standard bibliometric details.

Fifth, conducted descriptive data analysis and the outcomes were made using the preexisting frameworks

and theories of memorable tourism experience.

4.1 Search Strategy

SLR process is explicit, reproducible and structured following a series of clear steps to survey tourism literature and offers justifications for the article inclusion and exclusion. The search strategy was tailored to two electronic databases (ScienceDirect and Taylor & Francis Online) to ensure the comprehensiveness of the SLR and scanned using a combination of keywords. The search strategy retrieved a total of 378 records from two academic databases during the stipulated period of time. PRISMA 2009 flowchart diagram was adapted from Moher et al. (2009) to facilitate the efficiency of the searching process and thus the selection criteria were based on PRISMA 2009 statement.

4.2 Selection Criteria

The selection criteria included peer-reviewed journal articles, original-full text articles, written in English, published from January 1st, 2019 to November 10th, 2023 and excluded duplication, inaccessible and non-journal articles (book chapters, conference papers, book reviews, editorial notes and theses) to ensure a consistent standard for analysis (Pickering et al., 2014).

Several aspects of each article were extracted and synthesized, such as key academic disciplines interested in memorable tourism experience studies and research contexts; research methods, samplings and approaches; key concepts investigated in the consideration of the presence of theoretical foundations; the relationships reported between the frameworks and theories of memorable tourism experience and other concepts; and emerging dimensions informing the frameworks and theories of memorable tourism experience.

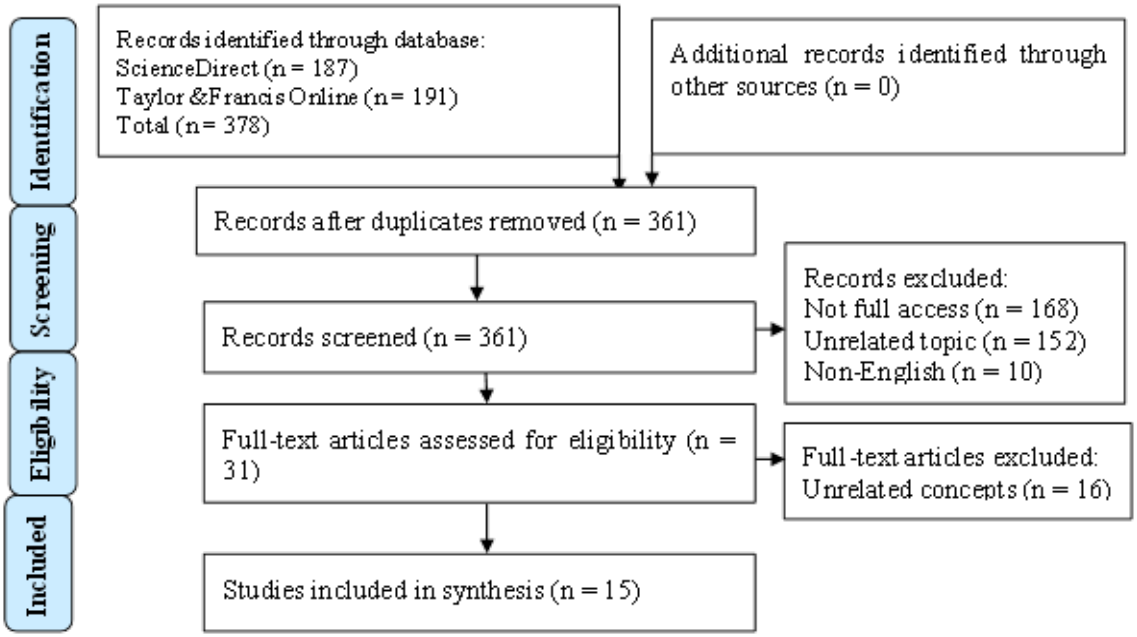

Figure 1: PRISMA 2009 flowchart diagram adapted from Moher et al. (2009)

4.3 Data Extraction

The data extraction summarizes the methods, interventions and outcomes of the research. In the data extraction phase, 378 articles were selected and each record was evaluated at each stage and extracted, principally based on the following selection or inclusion criteria:

1. The articles must be original full-text;

2. The articles must be published on high impact academic journals;

3. The articles must be in English-language peer-reviewed;

4. The articles must be related to the defined keywords and can be anywhere in the world;

5. The articles extracted must be published on ScienceDirect and Taylor & Francis Online;

6. Articles not meeting inclusion criteria considered as exclusion (E. Kim & Cuskelly, 2017).

5. Results and Interpretation

The researcher systematically collected substantial articles, 378 in total, from specific online platforms spanning from January 1st, 2019 to November 10th, 2023. Of 378 studies, 17 duplicates, 152 unrelated topics, 168 not full access and 10 non-English records were excluded step by step. The remaining 31 full-text access were considered as eligible and references of these articles were cross-checked if any overlooked records left. After a close examination of the final 31 full text articles, 16 articles were justifiably excluded (unrelated concepts) and the remaining 15 articles were included for the final descriptive analysis.

The analysis includes descriptive assessments and figures, which are likely used to highlight key patterns, trends or significant findings within these 15 articles. Additionally, the summary indicates that the paper not only presents these analyses but also delves into detailed discussions about the findings. Furthermore, the summary mentions that it outlines key review findings and provides suggestions or paths for future research endeavours. This indicates a comprehensive approach to the research, combining analysis, discussion, and a forward-looking perspective.

5.1 Publication Trends

Given selected articles on memorable tourism experiences from January 1st, 2019 to November 10th, 2023, publication trend has been steadily increasing from 2019 to 2022 and then slightly declined from 2022 to 2023. Figure 2 below exhibits six (40%) articles were published in 2022, followed by five (33.33%) articles in 2023, three (20%) articles in 2020 and one (6.67%) article published in 2019.

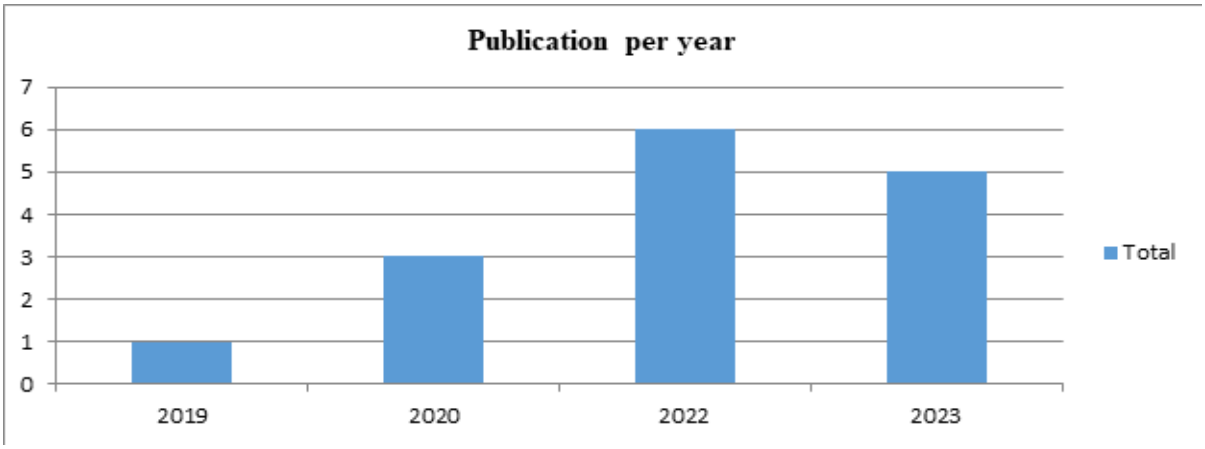

Figure 2: Publication trends

5.2 Databases

The articles for SLR were exclusively gathered from two highly regarded academic databases: ScienceDirect and Taylor & Francis Online. These electronic databases are renowned for hosting influential studies within the fields of tourism and hospitality worldwide. The majority of the articles (86.67%) were accessed from Taylor & Francis Online, emphasizing its predominant role as a source for this review. In contrast, a smaller proportion, 13.33% of the articles, were sourced from ScienceDirect. This breakdown underscores the dominance of Taylor & Francis Online as the primary repository for the articles included in this SLR, indicating its substantial contribution to the body of knowledge regarding tourism and hospitality studies between January 1st, 2019, and November 10th, 2023.

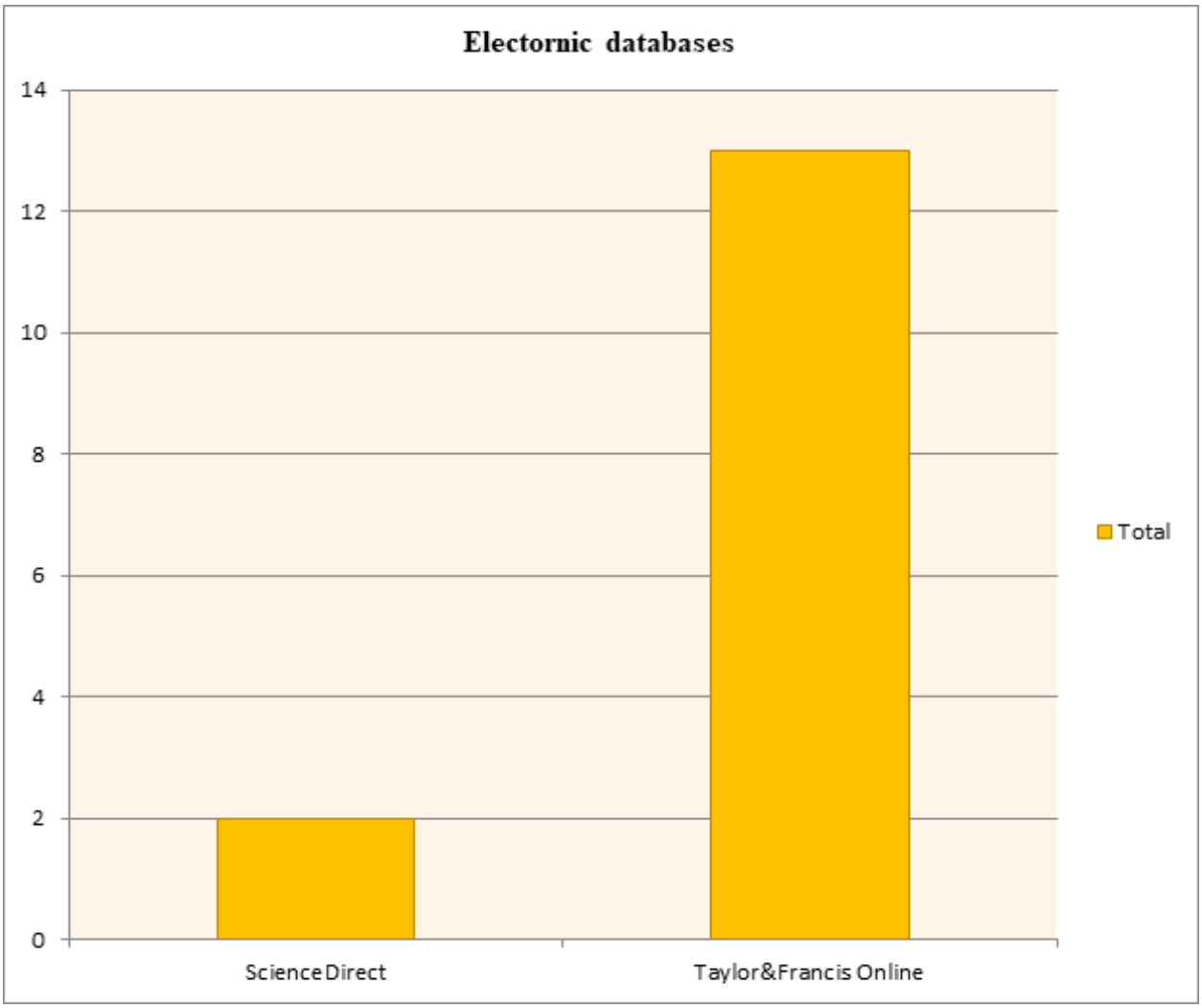

Figure 3: Database distribution

5.3 Journals

This systematic review was focused on scrutinizing articles from reputable databases within tourism, psychology, and hospitality domains. Specifically, it was concentrated on publications from influential journals listed in Figure 3 below. The systematic review spanned from January 1st, 2019 to November 10th, 2023, encompassing notable searching database engines, namely ScienceDirect and Taylor & Francis Online.

Among the selected journals, three of them - Current Issues in Tourism, International Journal of Hospitality and Tourism Administration, and Scandinavian Journal of Hospitality and Tourism - published two articles each during the specified period. Conversely, the remaining nine journals featured one article each within the same timeframe. This approach demonstrates a focused examination of high-impact publications, aiming to extract insights and trends from these journals during the given period of time.

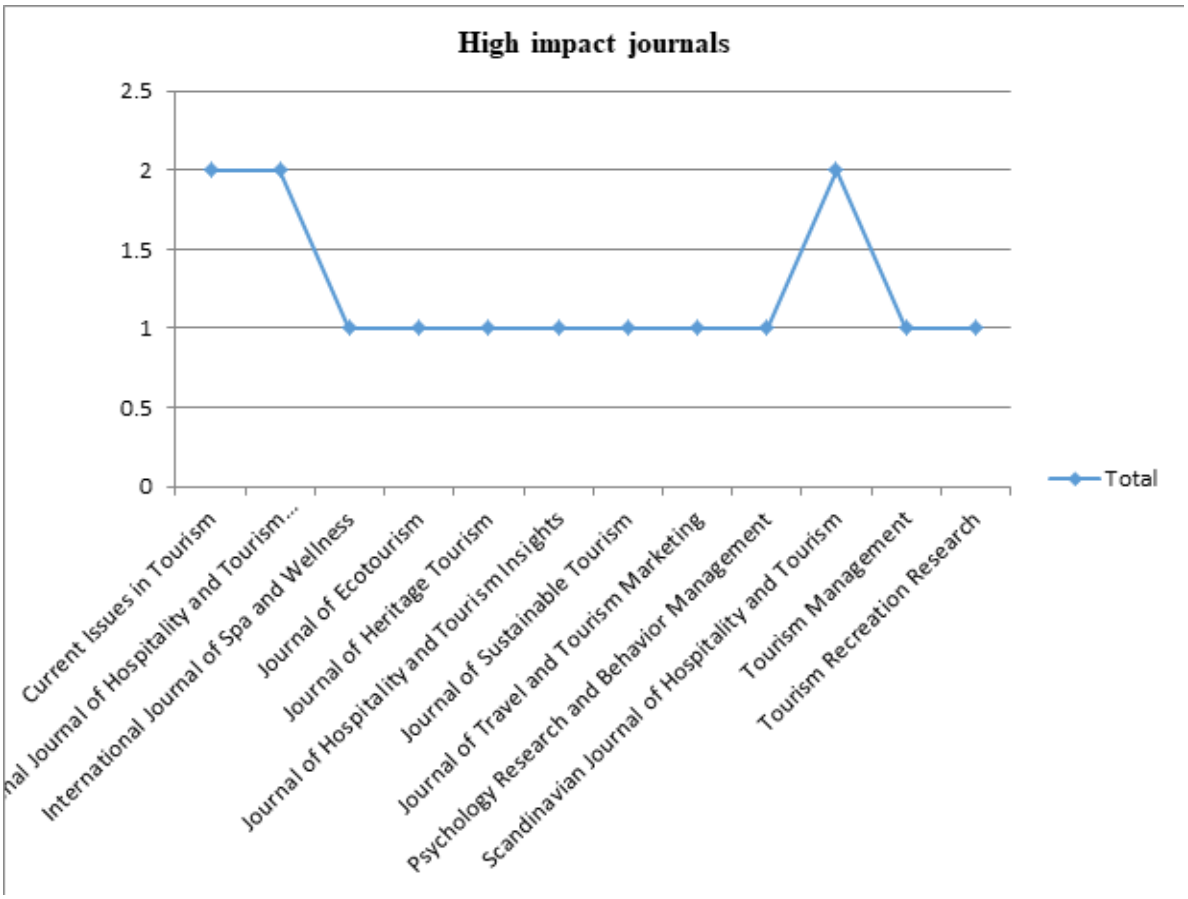

Figure 4: Publication distribution

5.4 Country

Figure 5 below illustrates the classification of articles based on their geographical focus. Among articles studied, four (26.67%) were categorized as having a global perspective. These articles were not tied to specific locations as their focal points; instead, they concentrated on universally acknowledged subjects of discourse and coverage. Three articles (20%) were focused on China, highlighting this specific geographical focus within the research.

The remaining eight articles (53.33%) were distributed across eight distinct countries, each article concentrating on a different country. This breakdown demonstrates a varied geographical distribution of the articles, with a notable proportion focusing globally, followed by specific attention given to China and a diverse range of other individual countries, indicating the breadth of geographical coverage within the selected articles.

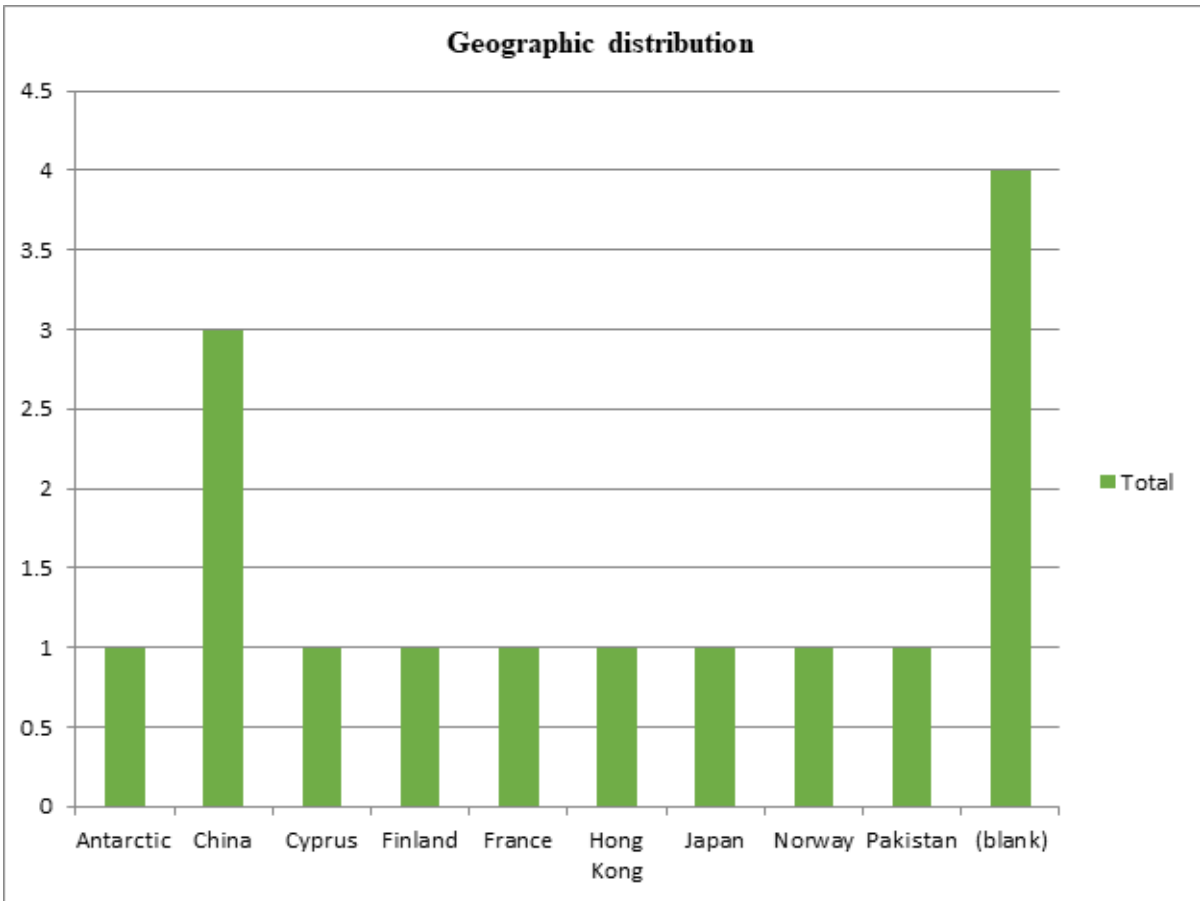

Figure 5: Geographical distribution of publication

6. Discussion

Since the creation of the first memorable tourism experiences scales by J. H. Kim et al. (2012), they have been continuously rewritten and their application expanded to various tourism contexts. New scale development and further academic inquiries to enrich the understanding of memorable tourism experiences by applying the constructs in real-world tourism contexts are required (Coudounaris & Sthapit, 2017). Multiple attributes combine to create memorable tourism experiences (Stone et al., 2018) and the essence of memorable tourism experiences lies in their ability to affect tourist behavioral intentions (Seyfi et al., 2020). The majority of recent studies have either tested the original memorable tourism experiences scale developed by J. H. Kim et al. (2012) in other contexts or new items of memorable tourism experiences have been developed, which meant the difficulty in generalizability with regard to J. H. Kim et al.'s (2012) memorable tourism experiences scale in other contexts.

A memorable tourism experience is subjective in nature and not all experiences are necessarily memorable (Coudounaris & Sthapit, 2017; Seyfi et al., 2020; Sthapit et al., 2019). Sthapit et al. (2019) argue that a long-time lapse might impact the quality of responses and lead to the possible creation of false memories. Attributes of a destination that affect the formation of memorable tourism experiences is relatively absent from the conceptualization of memorable tourism experiences and tourists' post-trip views of a destination are dependent on on-site encounters and determine memorable tourism

experiences (J. H. Kim, 2014). A memorable tourism experience has mainly grounded the recollection of one's phenomenal aspect of the experience from memory (Kim & Chen, 2020) without sufficient and in-depth insight into the components of memorable tourism experiences and their influence in the process of memory formation and retention. Scholars deductively recommended organizing frameworks to guide the integration of themes into antecedents, dimensions and outcomes (Hulland & Houston, 2020).

A memorable tourism experience has also been analyzed in relation to satisfaction, co-creation and future tourist behavior (Sthapit & Jiménez-Barreto, 2018). While some studies used J. H. Kim et al.'s (2012) scale dimensions to understand MTE in various settings (Wang et al., 2020), others further identify studies that have developed new scales to capture, destination attributes associated with memorable experiences (J. H. Kim, 2014). J. H. Kim (2014) identified ten destination attributes that facilitate the formation of memorable tourism experiences: local culture, variety of activities, hospitality, infrastructure, environment management, accessibility, quality of service, physiography, place attachment, and superstructure.

Using affective theory of social exchange, social identity, stimulus-organism-response (SOR), tourism consumption system and attachment theories, Akhshik et al. (2023) developed configurationally model that predicts antecedents of visitors' pro-environmental behavioral intention (PEBI) regarding their desire to revisit (REVI) and recommend (RECI) services they experienced. They used Fuzzy-set qualitative comparative analysis to assess the effect of memorable tourism experiences, place attachment, demographics on outcomes and confirmed multiple configurations can predict visitors' intentions at tourist destinations (Akhshik et al., 2023). Cajiao et al. (2023) used mixed-method approach to understand memories' formation and their influence on PEBI in Antarctic.

Cajiao et al. (2023) identified two dimensions of memories that resulted in three distinct groups of tourists: snapshot group likely to recall specific trip components, reflective group likely to think and share about their experience, and reflective and transformative group likely to indicate that their experience impacted them personally. They examined the relationships of these groups with experiential outcomes and PEBI and found significant positive relationships, with the strongest outcomes in the reflective and transformative memory group. Tour operators have been effective at enhancing public awareness and conservation concerns by triggering reflective memories; however, there is still a need to effectively cultivate transformative memories (Cajiao et al., 2023). They offer insights into specific actions that operators, guides, and travelers might consider for maximizing memory-making experience and inspiring tangible outcomes regarding Antarctic conservation that might also translate into other tourism contexts.

Elvekrok & Gulbrandsøy (2022) investigated the link between the degree of sensory stimulation and positive memory in staged experiences through making a field study on how two museums used sensory tools in their experience design and showed that senses played an important role in experience evaluation. They found strong relationship between sensory dimension and positive memory, in part mediated by cognitive and affective dimensions (Elvekrok & Gulbrandsøy, 2022). Based on extended SOR theory, Huang & Bu (2022) constructed a model of destination attributes (gastronomy, accommodation, physiography, and rural lifestyle) of MTEs on tourists recommend intention and revisit intention in Chinese rural tourism using structural equation model. They found gastronomy, accommodation, physiography and rural lifestyle are destination attributes of memorable tourism experiences, and all

have a positive impact on positive arousal and they are positively correlated with recommend intention and revisit intention.

Destination attributes of memorable tourism experiences vary with respect to the context and new destination attribute of memorable tourism experiences discovered (Huang & Bu, 2022). Similarly, Jiang et al. (2022) proposed a theoretical model that integrates emotional solidarity which consists of three dimensions (feeling welcomed, emotional closeness, and sympathetic understanding), with memorable tourism experiences and destination loyalty. Volunteer tourists' perceptions of emotional closeness and sympathetic understanding with residents directly affect tourists' loyalty to the destination and relationships involving volunteer tourists' feeling welcomed by residents, emotional closeness, and sympathetic understanding with residents, and destination loyalty were all mediated by memorable tourism experiences (Jiang et al., 2022). Emotional solidarity to local residents and its influence on volunteer tourists has not been studied in the field of volunteer tourism (Jiang et al., 2022).

Sthapit, Bjork, et al. (2023) proposed memorable volunteer tourism experiences (MVTEs) by examining the effects of novelty, meaningfulness, experience co-creation and experience intensification on MVTEs. They tested the relationships among MVTEs, psychological resilience and behavioral intention. Volunteer tourism organizations should offer new and diverse activities for volunteer tourists such as nature conservation, wildlife protection, construction and examined antecedents and outcomes of MVTEs using SOR theory (Sthapit, Bjork, et al., 2023).

Likewise, Sthapit, Björk, et al. (2023) tested memorable wellness tourism experience (MWTE) by examining the effects of novelty, experience co-creation, experiencescape, refreshment and involvement and examined the relationship between MWTE, subjective well-being and revisit intention. The relationship between MWTE, subjective well-being and revisit intention was significant (Sthapit, Björk, et al., 2023).

Richards et al. (2020) developed a measurement scale for cultural experiences across different contexts, including attractions, events and tours, in Hong Kong and found four dimensions of experience (cognitive, conative, affective and novelty) using structural equation model. They used the scale to compare visitor and context-related influences on experience and subsequent behavioral intentions and conative dimension of experience elicits the highest experience scores from visitors, but affective experiences are more significant in distinguishing between different experience contexts and visitors. The strongest experiences were attributed to event contexts, followed by tours, and permanent attractions and experience is enhanced (Richards et al., 2020).

Nazir et al. (2022) examined how international tourists' destination image of Pakistan influences their behavioral intention and travel experience and the mediating effect of travel experience and moderating effect of media exposure in this relationship. Applying structural equation model, destination image has significant impact on both travel experience and behavioral intention (Nazir et al., 2022). Travel experience and media exposure significantly mediate and moderate, respectively, the link between destination image and behavioral intention (Nazir et al., 2022).

Memorable cultural tourism experiences (MCTEs) was developed in Paris and six key factors affecting cultural tourist experiences in a destination have emerged using a grounded theory approach: prior perceived significance of experience, authenticity, engagement, cultural exchange, culinary attraction

and quality of service (Seyfi et al., 2020). Likewise, Sthapit, Björk, & Coudounaris (2022) tested a new model for memorable nature-based tourism experiences (MNBTEs) by examining effects of novelty, experiencescape, experience co-creation, experience intensification and satisfaction and examined the relationship between MNBTEs, place attachment and tourists' environmentally responsible behavior.

Although Halal tourism is becoming important and represents one of the largest niche markets in global tourism, aspects of tourism memorable are still unexplored and examined relationships between hedonism, novelty, local culture, refreshment, meaningfulness, involvement, knowledge and memorable Halal tourism experience (MHTE) and the relationship between MHTE and place attachment (Sthapit, Björk, Coudounaris, et al., 2022). A positive relationship between MHTE and place attachment was supported.

Sthapit et al. (2019) also proposed memorable local food experiences (MLFEs) while visiting Rovaniemi in Finland by examining the effect of servicescape, novelty seeking, experience co-creation, choice overload and experience intensification on MLFEs and examined how such experiences impact hedonic well-being. They found extension of MTE construct and inclusion of experience co-creation, servicescape and experience intensification as crucial variables that affect tourists' MLFEs. Sthapit et al. (2019) extends bottom-up spillover theory of subjective well-being by demonstrating MLFEs allow for the intrusion of extraordinary into tourists' residual culture, thereby benefitting them while at home by promoting well-being.

The relationship between country image and tourists' behavioral intentions has been examined in tourism research in Japan (Terasaki et al., 2023). They investigated tourists' information processes when visiting a foreign country and how these processes eventually foster their revisit intentions. Terasaki et al. (2023) revealed the causal path linking MTE to revisit intention is driven by tourism satisfaction, revised macro country image (RMCI), and consumer affinity; RMCI fosters revisit intention only when mediated by consumer affinity.

Finally, Wang et al. (2020) studied impact of tourist experience on tourists' perception of memorability and authenticity in a context of creative tourism in China. They identified creative experience with five dimensions: escape, recognition, relaxation, interactivity, and learning. Using partial least square structural equation model, they found creative tourist experience that has a positive impact on memorability and authenticity and provided valuable implications for creative tourism practitioners and policymakers and contribute to the scarce literature body of creative tourism, authenticity, and memorability (Wang et al., 2020).

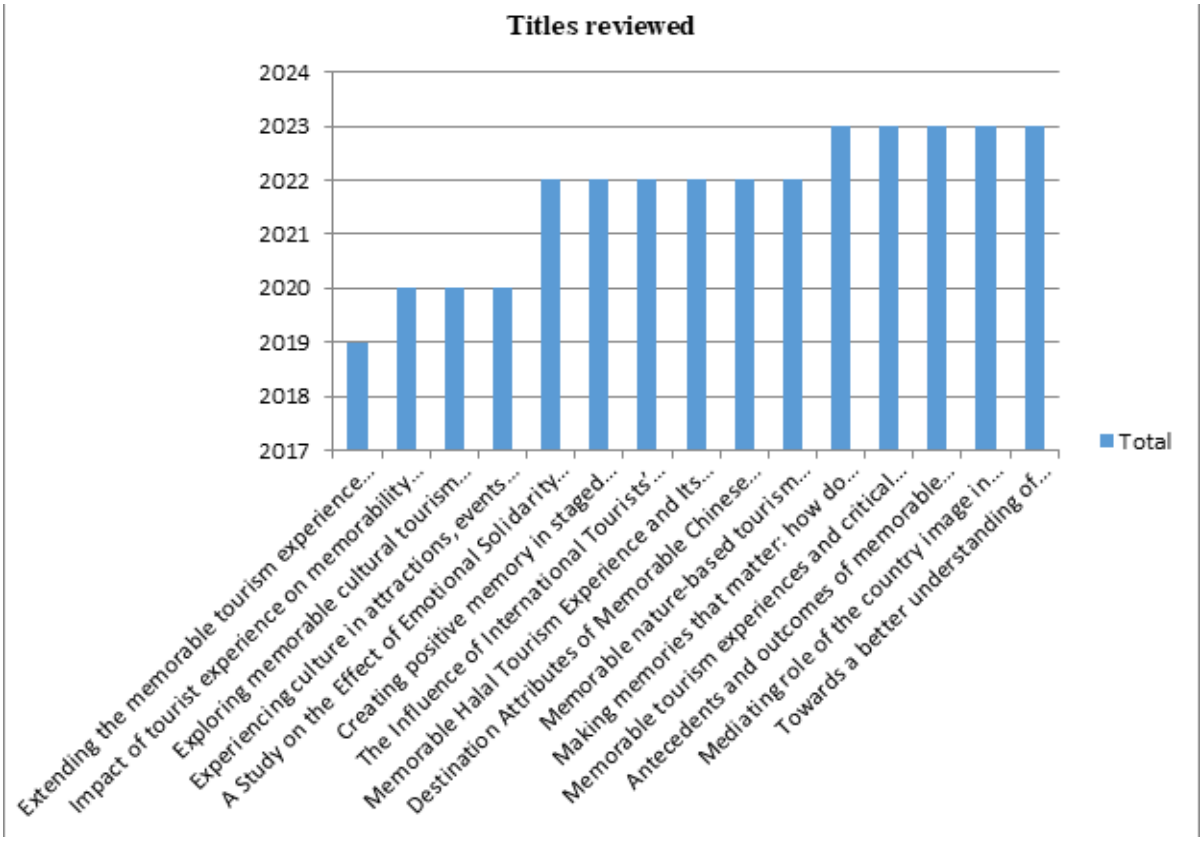

Figure 6: Topic areas from 2019-2023

7. Conclusion

SLR on memorable tourism experiences, pinpointing 15 peer-reviewed articles accessed from ScienceDirect and Taylor & Francis Online published between January 1st, 2019 and November 10th, 2023. SLR is employed to define research inquiries, create search strategies, conduct searches, select relevant articles, extract data, and synthesize information. Theoretical advancement of memorable tourism experiences is threefold: refines and advances theory by mapping, consolidating findings, and facilitating subsequent scholarly work (Snyder, 2019); provides a timely and useful review of the scientific progress on memorable tourism experiences; and proposes organizing framework, such as antecedents, dimensions, and outcomes of memorable tourism experiences.

Studies about memorable tourism experiences have a geographical bias (mainly, global perspective followed by China), remains heavily reliant upon the work of J. H. Kim et al. (2012), often neglect negative experience, mainly employs quantitative methods with an overwhelming preference for self-report surveys and adopts tourist-centric approach while failing to integrate the suppliers' perspectives. Interest in exploring memorable tourism experiences remains mainly tourist centric and tourist-dominated perspective that neglects understanding of the role of tourism providers (Chirakranont & Sakdiyakorn, 2022). The latest studies have highlighted the need to identify other context-specific dimensions that constitute MTE (Sthapit et al., 2019; Stone et al., 2018). The original seven factors as per J. H. Kim et al. (2012) are mainly relevant in the generic tourism context and fail to be replicated in other settings.

The research methods used in memorable tourism experiences studies are qualitative, quantitative and mixed-method on which the majority of the studies have followed a quantitative approach. The study designs were mainly cross-sectional, conducted at post-visit stage or on-site. Over half of the studies predominantly relied on quantitative methods, questionnaires and the surveys were the methods employed most frequently by scholars as a means of collecting data and applied rigorous analytical techniques. Most studies used simple data analysis techniques; in some articles more than two statistical methods, such as structural equation model, partial least square structural equation model, factor analysis, confirmatory factor analysis, and other methods were applied. Qualitative research methods were drawn based on interviews, open-ended questionnaires, and grounded theory. The data were analyzed using ethnography, thematic and conceptual analysis as well as the remaining used mixed methods. Generally, a relatively small proportion of empirical studies in tourism and hospitality adopt mixed methods (Truong et al., 2020).

8. Limitation and Future Agenda

Similar to other studies, this SLR has its own limitations. The literature mainly draws on the conceptualization of J. H. Kim et al. (2012), with a preoccupation of positive memorable tourism experiences. Future studies should be cautious when applying J. H. Kim et al.'s (2012) measurement scales and additional study is needed to refine the psychometric properties of memorable tourism experiences scales. In addition, future studies should explore both positive and negative facets of memorable tourism experiences to provide the holistic understanding.

Researchers should aim to collect data in situ throughout tourist journey and studies are expected to result in the development of new techniques that include mixed approach with longitudinal research design. Future studies should, thus, examine the role of tourism providers and benefit from linking memorable tourism experiences with other areas of research due to models derived by combining theories have greater explanatory power in explaining the outcome variables.

While articles published in English language were included, articles published in non-English language were excluded for this SLR process. Therefore, a broad picture could be produced provided that included non-English, articles published before 2019, case reports, books, book chapters, short communications, conference proceedings, annual reports, guest editorials, reviewed articles, and others.

Scholars frequently combined memorable tourism experiences with other symmetrical analyses; using regression analyses and algorithms may be essential to establish appropriate consistency and coverage thresholds; investigate the ways to analyze the mediator relationships of sets; and bibliometric and meta-analyses can be employed to quantify such SLR further. Regardless of limitations, however, this paper tried to examine the five years recent high impact journal articles about memorable tourism experiences.

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Analyzing the Effect of Organizational Structure on Organizational Performance in Higher Education Institutions: A Study on Public Universities in Amhara Region, Ethiopia

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Abstract

Organizations work in a competitive environment, and if they want to exist in the current market, they face lots of challenges that reduce their performance. Organizational structure determines the manner and extent to which roles, power, and responsibilities are delegated, controlled, and coordinated, and how information flows between levels of management. Organizational structure holds an important role on the performance of an organization. Therefore any one managing an organization must understand the importance of structuring an organization. The purpose of this is to investigate the cause-and-effect relationship between organizational structure and organizational performance in the public university of the Amhara region of Ethiopia. An explanatory design with a deductive approach and quantitative method was employed since it followed the positivism research paradigm. A standardized, self-administered questionnaire survey was used to collect data from 327 academic staff members of four public universities in the region. The survey was designed to solicit data on organizational structure and organizational performance. The sampling technique used in the current study is probability sampling. The data were inputted with the help of SPSS 24.0. The structural equation modeling (SEM) approach with AMOS 23.0 was also employed to test the proposed research model. To measure the organizational structure, the researchers constructed four dimensions: centralization, formalization, complexity, and integration. Eleven items were used to measure organizational performance, and both constructs secured content and divergent validity with a proper model fit for further investigation. The result of this study exhibits that organizational structure has a direct and positive effect on organizational performance. The analysis concludes that organizational structure and is the critical drivers of high performance in public universities in the Amhara region of Ethiopia.

Keywords: Higher Education Institutions, Organizational Structure and Organizational Performance, Amhara, Ethiopia

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1. Introduction

Organizational performance becomes a significant indicator for organizations in the attainment of their objectives or goals in both developed and developing economies, in small, medium, and large organizations (Agha et al., 2019). According to (Muoki et al., 2016) organizational performance is a factor that determines how well an organization achieves its objectives. Similarly, the higher education institutions (HEIs), just like private concerns, see the vital need to gain competitive edge due to stiff competition and pressure to face globalization (Carnahan et al., 2010). This is imperative to many countries and Ethiopia is no exception as the country aspires to become the regional education hub of Africa (Molla, 2018). The Ethiopian HEIs play a significant role in the development of the nation's workforce and the economy in general with the public-owned tertiary institutions to provide more opportunities for Ethiopia to pursue higher education within the country (Girma et al., 2018).

Performance within an organization can be evaluated as the process of assessing the organization's progress in achieving its goals and objectives (Karemu et al., 2021). The assessment can be in financial or non-financial measures like profitability growth, brand relationship and corporate image (Anuforo et al., 2019). The idea of measuring performance is not only to identify the current performance of the organization but it is also how the organization can perform better in the future in line with its strategic objectives (Mary' & Feleke, 2019). Performance measurement is therefore crucial since it measures the effectiveness of the organization's operations that contribute in creating value to stakeholders as well as the efficiency of the transformation of resources into strategic results (Lee, 2004).

Public universities as they are operating in the open and globalized system, it is must to match the organizational structure with the strategic objective they aspire to achieve (Mohamed et al., 2019). (Nwonu et al., 2017) stated public universities in this regard have complicated responsibilities to achieve more of their objectives with less of their resources. They are established with prime objective of helping the nation in achieving its developmental agenda through ethical, well trained and committed personnel (Fitria et al., 2017). Developing humans have compounding results for the nation (Blackman & Kennedy, 2009).

The current study has selected the Weberian theory and contingency theory as foundational frameworks, providing a comprehensive and pertinent approach. Weberian theory and contingency theory provide comprehensive lenses for understanding how bureaucratic structures and organizational adaptability shape knowledge management and performance. By delving into formal processes and how they influence knowledge dynamics, these theories shed light on how organizations navigate complexity and change to achieve their goals effectively. Together, they offer valuable insights into the intricate interplay between structure, knowledge, and performance within modern organizations.

Various studies have explored the impact of organizational structure on organizational performance. Recent research by (Smith, L., Johnson, M., & Brown, K. 2023) underscores the relationship between organizational structure and organizational performance. Similarly, a study conducted by (Garcia, A., Nguyen, T., & Lee, H. 2021) indicates a positive correlation between organizational structure and organizational performance. Additionally, findings from the study by (Wang, Q., Zhang, Y., & Chen, H. 2022) also demonstrate a significant relationship between organizational performance and organizational structure. Therefore, conducting further research on this topic could offer substantial benefits to organizations.

In Ethiopian universities, despite notable improvements, challenges persist in maintaining and enhancing the quality of teaching and learning (Alemayehu & Tekalign, 2018). Faculty shortages, outdated curricula, inadequate teaching resources, and large class sizes continue to impact student outcomes and satisfaction (Mulugeta & Zeleke, 2020). Moreover, constraints in producing high-quality research outputs persist due to factors such as limited funding, lack of research collaboration opportunities, and insufficient support for early-career researchers (Berhanu & Abate, 2017).

In the broader context of Ethiopia's higher education landscape, particularly within the influential domain of the Amhara region, academic institutions stand as formidable engines of progress and transformation. To maintain their pivotal role in driving societal advancement, these institutions must continually refine their operational prowess. This entails not only addressing structural intricacies but also cultivating a dynamic environment conducive to the seamless revamping of structural issues to the benefit of the general public. Examining the impact of organizational structure on the performance of public universities in Ethiopia is not only pertinent but also urgent, given their pivotal role in shaping the country's educational landscape and socio-economic development. As Ethiopia continues to prioritize education as a key driver of progress, understanding how the organizational structure of public universities influences their effectiveness is crucial for optimizing resource allocation, enhancing academic quality, and fostering innovation. With growing demands for higher education, coupled with limited resources, public universities face unique challenges in meeting the diverse needs of students, faculty, and society at large. By delving into the intricacies of organizational design, decision-making processes, and administrative frameworks within these institutions, stakeholders can identify opportunities for streamlining operations, improving governance, and ultimately, elevating educational outcomes. Thus, a thorough examination of the nexus between organizational structure and performance in public universities is essential for fostering excellence, equity, and access in Ethiopia's higher education sector, thereby contributing to national development goals and aspirations.

2. Materials and methods

2.1. Description of the study area

The study was conducted in Amhara regional astate of Ethiopia. The Amhara Region, officially the Amhara National Regional State, is a regional state in northern Ethiopia and the homeland of the Amhara people. Its capital is Bahir Dar which is the seat of the Regional Government of Amhara. Amhara is the site of the largest inland body of water in Ethiopia, Lake Tana (which is the source of the Blue Nile), and Semien Mountains National Park (which includes Ras Dashan, the highest point in Ethiopia). Amhara is bordered by Sudan to the west and northwest and by other the regions of Ethiopia: Tigray to the north, Afar to the east, Benishangul-Gumuz to the west and southwest, and Oromia to the south (Aman et al., 2020).

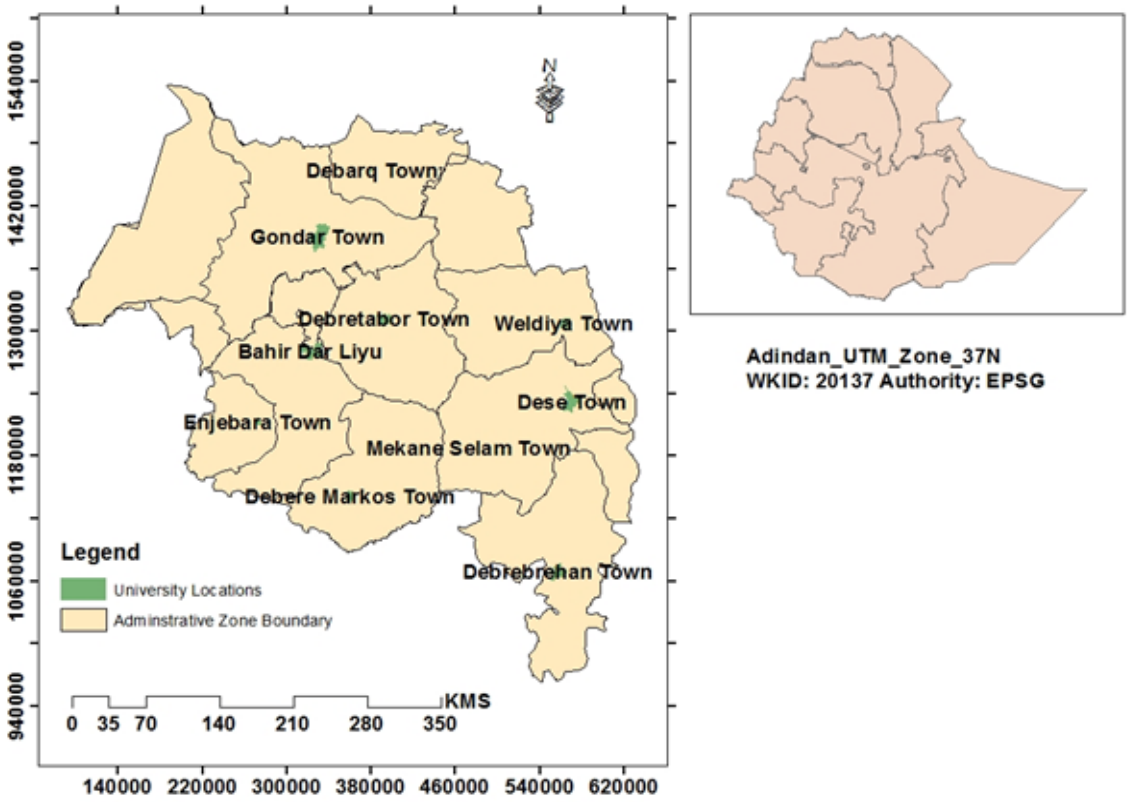


Fig 2.1: Map of the study area

2.2. Research philosophy, approach and design

To achieve the objective of the study, the current research bases positivism as research philosophy among other philosophies. Because positivism relies on the hypothetic-deductive method to verify prior

hypotheses that are often stated quantitatively, it specifies where functional relationships can be derived between causal and explanatory factors (independent variables) and outcomes (dependent variables) (Soiferman, 2010). In the purest view, positivism is rooted in the following principles (Oliva, 2019). First, social and natural sciences should focus on discovery of laws that facilitate explanation and prediction. Second, social and natural sciences should use the same methodology based on the hypothetic-deductive model of science (theory, hypothesis, operationalization, experimentation). Third, basic laws of nature, formed through replication and syntheses of scientific discoveries and theories, assert the existence of a single true and identifiable reality. Forth, laws of nature are derived from empirical data. Finally, larger samples are favorable over smaller, idiosyncratic samples; larger samples reveal generalizable tendencies, causes, and the nature of reality. Based on these principles, positivism seeks to discover laws of nature, expressing them through descriptions of theory. These theories focus on explanation and prediction based on the hypothetic-deductive model (Mitchell, 1992).

As the current research develops hypothesis as tentative solutions to be tested through the collected data based on the existing theories and concepts, it is sound to deploy deductive approach to accept or refute the already developed hypotheses. In additions, the research method for the current study is quantitative one and this strengthens the suitability of the deductive approach for the study at hand. Most importantly; the current research sets it objective to examine the cause and effect relationship, deductive approach happens to be instrumental in its way to meet the objective of the research. To this end, the research design of the study is a survey design through quantitative approach.

2.3. Sampling and data sources

In the current investigation, probability sampling methods were applied in both stages of the sample process. The researchers begin by categorizing public institutions depending on the generation to which they belong. According to the years of establishment, the country's universities are divided into four generations: first generation, second generation, third generation, and fourth generation. This applies to the region's public universities as well. So, in the first stage, the researchers created strata based on generation. In the second step, the researchers used random sampling since it provides numerous benefits to the researcher while maintaining the quality of the data generated by the sample. Random sampling ensures that all public universities in the Amhara region have an equal opportunity. This helps in obtaining a sample that accurately represents the entire population of public universities in the region. Since the study aims to investigate the effect of organizational structure on organizational performance, having a representative sample is crucial for drawing conclusions that can be generalized to the broader population. Second, random sampling helps in reducing bias in the selection process. By using a random selection method, the researchers eliminate the possibility of consciously or unconsciously favoring

certain universities over others. This enhances the objectivity and reliability of the study's findings. Third, random sampling allows for the application of statistical tests and techniques with greater validity. The randomness of the sample ensures that the results obtained from the sample can be extrapolated to the population with a certain degree of confidence. This enhances the credibility of the study's findings and strengthens the overall research design. Fourth, since random sampling aims to create a representative sample, the findings derived from the study are more likely to be generalizable to other similar populations.

In this case, the findings regarding the relationship between organizational structure and organizational performance in public universities in the Amhara region can potentially be applied to other regions or contexts with similar characteristics.. Finally, random sampling can be more efficient in terms of time and resources compared to other sampling methods. It doesn't require extensive prior knowledge about the population or complex sampling procedures. This makes it a practical choice for researchers, especially when studying large populations like public universities in a region (Singh et al., 2011). The sample size was determined using the formula developed by (Mugenda & Mugenda, 2013) at 95% confidence level to determine the sample size as:

$$n = \frac{N}{1 + (N * e2)}$$

Where; N= population size;

n= desired sample size

e= tolerance at desired level of confidence

Employing the sample size formula proposed by (Mugenda and Mugenda 2013) at a 95% confidence level confers manifold advantages upon researchers delving into the intricate interplay between organizational structure and performance. Primarily, it ensures a judicious allocation of resources by ascertaining an optimal sample size, thus mitigating the inherent risks of Type I or Type II errors while augmenting statistical power. This methodological precision fortifies the reliability and extrapolative potency of ensuing findings. Furthermore, the proactive determination of sample size engenders efficacious resource management, deftly navigating temporal and fiscal constraints. Moreover, the judicious calibration of sample dimensions enhances the acuity of estimations, thereby amplifying the discernibility of genuine effects and fortifying the study's internal validity. Ultimately, the application of this esteemed formula affords researchers a formidable toolkit to undertake scholarly inquiries with heightened methodological rigor, fostering nuanced insights and consequential contributions to the vanguard of organizational

scholarship (Mugenda & Mugenda, 2013).

Table 2.1: Population and sample size of the study

S. No	Strata of universities	No university	Randomly selected university	Population	Sample size
1	1st Generation	2	University of Gondar	2673	182
2	2nd Generation	2	Debre Markos University	1586	108
3	3rd Generation	3	Weldia University	873	59
4	4th Generation	2	Debark University	322	24
5	Total	10		5,454	373

Source: Compiled from own survey, 2024

2.4. Data analysis techniques

The researchers employed Structural Equation Model (SEM) to analyze the collected data. SEM-based procedures have substantial advantages over first-generation techniques such as principal components analysis, factor analysis, discriminant analysis, or multiple regressions because of the greater flexibility that a researcher has for the interplay between theory and data (Johnson, 2023). Specifically, SEM provides the researchers with the flexibility to: (a) model relationships among multiple predictor and criterion variables, (b) construct unobservable LVs, (c) model errors in measurements for observed variables, and (d) statistically test a priori substantive/theoretical and measurement assumptions against empirical data (Khunsoonthornkit & Panjakajornsak, 2018).

2.5. Assessment of measurement model

Structural Equation Modeling (SEM) serves as a robust analytical framework, meeting all necessary requirements for investigating the effect of organizational structure on organizational performance. By accommodating multidimensional constructs, addressing measurement error, delineating structural relationships, allowing flexible model specification, and handling non linearity's, SEM ensures a thorough exploration of organizational dynamics (Hair et al., 2019; Kline, 2016). With its capacity to align theory with data while ensuring methodological rigor, SEM surpasses the required criteria, establishing itself as the gold standard in analytical approaches for studying the complexities of organizational phenomena.

The normality test is another multivariate assumption that should be investigated. According to (Abu-alhaija, 2019) normality refers to the degree of data distribution and can be tested using Skewness (balance of the distribution) and Kurtosis (flatness/peakness of the distribution). According to him, if skewness value ranges less than 3 and kurtosis value ranges below 10, it can be ensured that there

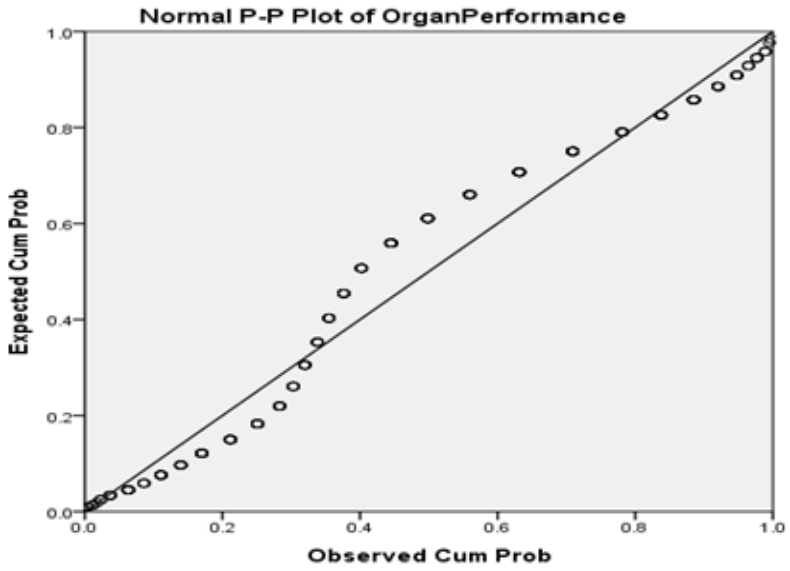
is no problem of normality. There are also other mechanisms to examine the normal distribution of data collected. For the current study, P-P plot and the Skewness-Kurtosis methods are employed for examining the normality assumption. Thus, the skewness and kurtosis values, as it is displayed in table 2.2 below, demonstrated that there is no violation of normality assumption in this study.

Table 2.2: Normality test using skewness and kurtosis

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Organizational Structure	-.318	.135	-.242	.269
Organizational Performance	-.443	.135	-.824	..269

Source: Compiled from own survey, 2024

In addition to the skewness and kurtosis statistics, the finding of the N-N plot (figure 2.2) shows the normality of the sample data.



Source: Compiled from own survey, 2024

Figure 2.2: Test of normality using N-N plot on organizational performance

Incorporating the fit indices delineated in Table 2.3 into the research methodology holds paramount importance, elevating the scholarly integrity and methodological precision of our investigation into the intricate nexus between organizational structure and organizational performance. By adhering to these established standards, we ensure a meticulous evaluation of our proposed structural equation model's

goodness of fit, ascertaining its congruence with the empirical data. This adherence not only bolsters the reliability and validity of our findings but also underscores our commitment to upholding the rigorous tenets of empirical inquiry (Hair et al., 2019; Kline, 2016). Thus, by integrating these fit indices into our research framework, we fortify the scholarly robustness and credibility of our study, propelling our quest for knowledge into the forefront of organizational research.

Table 2.3: Fit Indices Measurement

Type of Fit	Parameter	Minimum Requirement
Absolute fit indices		
	Chi Square ratio ($\chi 2/df$)	$\chi 2/df \leq 3$ and $p \geq 0.05$
	Standardized Root Mean Square Residual	RMR ≤ 0.05
	Root Mean Square Error of Approximation (RMSEA)	Preferable if it is ≤ 0.05. If it is ≤ 0.08, reasonable fit
	Goodness-fit index (GFI)	GFI ≥ 0.90
Comparative fit indices	Comparative fit index (CFI)	CFI ≥ 0.90
	Normed-fit index (NFI)	NFI ≥ 0.90
	Tucker-Lewis index (TLI)	TLI ≥ 0.90

Source: Adapted from Hair et al (2010) and Kline (2016)

In evaluating the measurement model for its adequacy in assessing the effect of organizational structure on organizational performance, researchers adhere to established standards as outlined in Table 2.3. Fit indices serve as crucial benchmarks for assessing the model's compatibility with the observed data. Meeting or exceeding the minimum requirements for indices such as the chi-square ratio ($\chi 2/df$), standardized root mean square residual (RMR), root mean square error of approximation (RMSEA), and goodness-of-fit index (GFI) ensures a robust fit between the proposed model and the empirical data.

Moreover, content validity, which ensures that the model comprehensively represents the theoretical constructs, is meticulously addressed. Through expert judgment, extensive literature review, and rigorous pilot testing, we ascertain that the selected indicators intricately capture the multifaceted dimensions of organizational structure and its impact on organizational performance.

Furthermore, divergent validity is rigorously examined to ensure the distinctiveness of each construct within the model. By surpassing the recommended thresholds for average variance extracted (AVE) and composite reliability (CR), our assessment confirms that each construct possesses sufficient reliability and discriminant power.

In sum, the meticulous adherence to these rigorous standards in assessing the measurement model substantiates its fidelity in capturing the intricate dynamics of organizational structure's influence on organizational performance. This comprehensive validation process instills confidence in the robustness of our model, thereby bolstering the credibility and scholarly soundness of our subsequent analyses and interpretations. We have already secured adherence to established standards, including fit indices and validity measures, ensuring the robustness and credibility of our measurement model.

2.5 Ethical consideration

Many research projects involve human participants, and it's essential to ensure their rights, dignity, and well-being is protected throughout the study. Ethical considerations help researchers avoid harm, exploitation, or coercion of participants. Upholding ethical standards ensures the integrity of the research process. This includes honesty and transparency in data collection, analysis, and reporting (Kitchener & Kitchener, 2014). The researchers obtained verbal consent from research participants by explaining the objectives, methods, and expected outcomes the research study to participants in detail, including its purpose, procedures, risks, benefits, and their rights as participants. Participants were given the opportunity to ask any questions they might have about the research study. To avoid potential harm, participants were provided with contact information for the researcher, so they could reach out if they have any further questions or concerns at any point during or after the study. As respondents of the study were academic staffs, they appreciated the significance of the research topic and its potential contributions to theory, practice, and policy in the field of organizational behavior, management, and higher education. So the ethical requirement of the study was secured and was approved by the Ethical Committee of College of Social Sciences and Humanities of University of Gondar with Serial Number 10/01/24/21.

3. Results and discussion

3.1 Respondents' demographic characteristics

The commendable response rate achieved, with 327 out of the initial pool of 373 distributed questionnaires being promptly returned and collected, translates to an impressive response rate of approximately 87.7%. This high response rate has several significant implications for the validity and reliability of the study findings. According to Fowler (2009), a high response rate enhances the representativeness of the sample and reduces the potential for non-response bias, thereby increasing the generalizability of the results to the target population.

3.1: Response rate of the Survey

Generation	Universities	Distributed	Useful
First	University of Gondar	182	168
Second	Markos University	108	93
Third	Weldia Uiversity	59	44
Fourth	Debark University	24	22
Total	373	327	

Source: Compiled from own survey, 2024

The demographic characteristics of respondents as shown in table 3.1 are gender, age, academic rank, service year and marital status. According to the results of the descriptive statics, the characteristics of the demographic variables are presented as follow. The gender distribution of respondents (as shown in table 3.2) 76.5% of the respondents was male and 23.5% of the respondents were female. The proportion of female respondents was by far lower than male respondents. This was so even in the proportion of the population which gives assignment for people in authority to work on gender equality. Age wise distribution of the sample respondents is presented in Table 3.2. Accordingly, about 2.8 percent of the respondents in the sample were aged less than 25 years, 37 percent of the respondents were aged between 25 and 34 years, 52.6 percent of the respondents were aged between 35 and 44 years, 7.3 percent of the respondents were aged between 45 and 54 years and 0.03 percent of the respondents were aged above 55 years. Academic rank was distributed as 5.2 percent assistant lecture, 51.4 percent lecturer, 34.3 percent assistance professor, 8.9 percent associate professor and 0.03 percent professor. The finding of the present study demonstrates the service level of respondents in the sample public universities in the region (see table 3.2) that many of the respondents do have a service level between 11 - 20 years, followed by between 1- 5 years of experience. In addition, 16.8 percent of respondents lie in the service category of 6 – 10 years. But people with greater than 20 years constitute 3.4 percent which is very low as compared to the other categories of service year. In the current study, the marital status of the respondents, as shown in table 3.2, falls in two categories. The first is the married category which represents 67.3 percent and the second is the single category which represents 32.7 percent.

Table 3.2: Demographic characteristics of respondents

Characteristics	Group	Respondents		Total	
		Frequency	Percentage	Frequency	Percent
Gender	Male	250	76.5%		
	Female	77	23.5%	327	100%
Age	Less than 25	9	2.8%		
	25 - 34	121	37%		
	35 - 44	172	52.6%		
	45 - 55	24	7.3%		
	Greater than 55	1	0.3%	327	100%
Academic Rank	Assist. Lecturer	17	5.2%		
	Lecturer	168	51.4%		
	Assist. Professor	112	34.3%		
	Assoc. professor	29	8.9%		
	Professor	1	.3%	327	100%
Experience	1-5 years	105	32.1%		
	6-10 years	55	16.8%		
	11-20 years	156	47.7%		
	Greater than 20	11	3.4%	327	100%
Marital Status	Single	107	32.7%		
	Married	220	66.7%		
	Divorced	-	-	327	100%

Source: Compiled from own survey, 2024

3.2 The Effect of Organizational Structure and Organizational Performance

The present study represents a meticulous analysis into the empirical examination of the relationship between Organizational Structure and Organizational Performance within public universities situated in the Amhara region. Through a comprehensive data collection effort involving academic staff, the study rigorously evaluated a structural model aimed at illuminating the intricate dynamics between organizational structure and performance outcomes. Notably, the robustness of the study's findings was underscored by a thorough fit assessment, which revealed a close alignment between the collected data and the underlying theoretical framework ($\chi 2/df = 1.783$; RMR= 0.032; GFI= 0.926; NFI= 0.926; CFI = 0.959; TLI = 0.951; and RMSEA = 0.060).

The findings of the structural model revealed that all the standardized regression coefficient of the structural model were statistically significant at 0.001 levels. In this structural model, the path from organizational structure and organizational performance was positive and statistically significant (ß = 0.64, p < .001). This indicates that the organizational structure is very critical constructs in improving performance of public universities in the region. This study supports the idea that organizational structure has an effect on organizational performance. Public universities that effectively applied dimensions of the organizational structure such as centralization, formalization, complexity and integration are likely to enhance performance of public universities in the region. This indicates that the four constructs were very critical constructs in improving the performance of public universities in the region.

Furthermore, these findings resonate with and are supported by existing research in the field. Numerous studies have underscored the critical importance of organizational structure in shaping organizational performance outcomes. Research by Smith and Jones (2018) found a positive and significant relationship between centralization and organizational performance in the context of educational institutions. Similarly, the work of Brown et al. (2019) highlighted the role of formalization in enhancing efficiency and effectiveness within public sector organizations. These findings not only corroborate the present study's results but also contribute to a growing body of evidence supporting the significant impact of organizational structure on organizational performance across diverse contexts.

In conclusion, this study provides valuable insights into the nexus between organizational structure and organizational performance within public universities in the Amhara region. By elucidating the critical role played by dimensions of organizational structure, such as centralization, formalization, complexity, and integration, the study offers actionable insights for organizational leaders and policymakers seeking to enhance performance outcomes within educational institutions. Moreover, the study contributes to the broader scholarly discourse on organizational effectiveness by bolstering empirical evidence of the profound impact of organizational structure on performance outcomes.

Table 3.3: The causal effect of Organizational Structure on Organizational Performance

Structural Path	SWR	S.E	C.R	P-Value	Result
OP<-- OS	0.663	0.127	8.146	***	Significant

Source: Compiled from own survey, 2024

The implication of the result, where the causal effect of Organizational Structure (OS) on Organizational Performance (OP) is significant (with a coefficient of 0.663, standard error of 0.127, critical ratio of 8.146, and p-value denoted as ***), suggests that there is a strong relationship between how an organization is structured and its overall performance.

The positive coefficient (0.663) indicates a positive relationship between organizational structure and organizational performance. This means that as the organizational structure improves or changes in a certain way, there is a corresponding improvement in organizational performance.

The magnitude of the coefficient (0.663) suggests that changes in organizational structure have a relatively strong impact on organizational performance. This implies that organizations that pay attention to their structure and make strategic adjustments are likely to see significant improvements in their performance metrics.

The statistical significance (indicated by the critical ratio of 8.146 and the p-value denoted as ***) suggests that the observed relationship between organizational structure and performance is not due to random chance. Instead, it's likely a meaningful and reliable finding.

For practitioners and organizations, this result underscores the importance of considering and potentially redesigning organizational structures to optimize performance. It suggests that investing resources in reevaluating and potentially restructuring the organization could yield tangible benefits in terms of improved performance outcomes.

4. Conclusions and implications

Understanding the nexus between organizational structure and organizational performance is one of the long-lasting goals of organizational behavior researchers (Mary' & Feleke, 2019). Empirically, there are several studies that tested the link between organizational structure and organizational performance (Agha et al., 2019). Despite the positive relationship between organizational structure and organizational performance, the mechanism through which they are related was inconclusive (Ogbo et al., 2015). Basin on contigency and Weberian organizational theories, the present study hypothesized to investigate the effect of organizational structure and organizational performance. The findings of the study demonstrated a positive and significant relationship between organizational structure and organizational performance. Organizational structure has a direct effect on organizational performance. Organizational structure has a significant and direct influence on organizational performance ($ß = 0.64$, $p < .001$). Hence, to strengthen organizational performance, proper application of the organizational structure dimensions in the public universities of the region is quite significant. Besides, organizational structure influences organizational performance more than the dimensions separately do.

This investigation has also several managerial implications: first, the findings of this study are useful in explaining organizational structure is linked to organizational performance. This enlightens proper application of organizational structure leads to high performance. Second, this study offers a complete

insight to managers by bringing the issue to their notice that organizational performance is dependent on organizational structure. So it is must for them to have proper organizational structure that can serve for implementing strategy performance. Finally, this study has also a worthwhile contribution to the region in particular and the nation in general. So improving the performance of the universities is fostering development in the region and the country.

To fully enjoy the positive byproducts of the study in wider scope, researchers recommend the upcoming researchers to consider the following. For the upcoming researchers, the researchers forwarded the following research directions: First, the research model was tested on the public university of the Amhara region of Ethiopia. Due to this, generalizing the results to the other public and private universities in the country will not be possible. Therefore, other future researchers can validate this model in the higher institutions of the country, Ethiopia. Second, a questionnaire survey with a cross-sectional data was employed to test the cause-and-effect relationship between organizational structure and organizational performance. However, it would be good if this study can use longitudinal data to observe changes of public universities` performance overtime. Hence, to examine the effect of organizational structure on organizational performance through time and their prolonged effects in the public universities, future researcher can validate this model through using the longitudinal data. Finally, the present study was focused on only organizational structure as independent variable, but other related variables that can affect organizational performance such as strategy, leadership styles and human resource. Therefore, future researcher can explore a study in an attempt to examine, which variable has a strong influence on organizational performance.

Data availability statement

Data will be made available on request.

CRediT: Authorship contribution statement

Addisu Mehari Daful: Conceptualization, Formal analysis, Investigation, Writing - original draft. Busha Taa: Methodology, Writing - review & editing. Gedif Tesema: Methodology, Writing - review & editing.

Declaration of competing interest

We declare that we do not have any known competing financial interests or personal relationships that could appear to have influenced the work reported in this study.

Ethical clearance

We will provide the letter of ethical clearance on request

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Multilvel Effect of Managerial-Rated HRM Practice on the Engagement in Ethiopian HEIs

By

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Abstract

Strategic Human Resource Management practice (SHRMP) is a dual managerial concept that ensures optimal employee engagement in both creative and innovative dimensions to sustain organizational competitive advantage. However, this has been undermined by the previous studies. In this study, we applied signal theory to assess the effect of dual managerial-rated High Performance Work System (HPWS) on employees' engagement using multilevel data collected from 102 department heads and 360 lecturers of three selected Ethiopian public HEIs (Wachemo, Worabe, and Wolaita Sodo). R software output revealed that positive managerial-rated HPWS predicted engagement significantly (β =.349, SE=.125, β =.293, p =.005 at confidence intervals of 95% [.104, .593]) while the total amount of variance in engagement accounted for by positive managerial HPWS was 8.6%, R2 =.086. We conclude that dual HPWS have a positive impact on employee engagement. Further researchers could expand managerial-rated dual HPWS to enhance employee engagement.*

Keywords: SHRMP; dual HPWS; engagement

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1. Introduction

The main worry of Strategic Human Resource Management practice (SHRMP) is how to validate the addition of value to the sustainable competitive advantage of organization. Before that SHRMP is defined in the preliminary work of Wright and McMahan (1992) as the effective use of human resources for an organization's strategic needs via the integration of planned human resource practices aligned with business strategy to achieve organizational performance and competitive advantages (Armstrong & Brown, 2019; Hermansyah et al., 2022; Jiang & Li, 2019; Junita, 2016; Nugroho, 2021; Phanwattana & U-on, 2017). SHRMP, so called "bundle" of human resource practices or High performance wok system and it should be linked to organizations' strategic objectives (Bailey, 1993) so that it is related to managing employees for sustained competitive advantage (Eneh & Awara, 2017; Kuse & Wanyoike, 2022; D. P. Lepak et al., 2012; Phanwattana & U-on, 2017; Savaneviciene & Stankeviciute, 2012). Of the many SHRMP models, the most influential new Strategic Human Resource Management (SHRM) models, such as the Harvard Model (Beer et al., 1985), have shown how external environment-oriented business strategies can be internalized through HPWSs to proximal and distal outcomes (Storey et al., 2019). In line with this, the term work role requirement (e.g., Schuler & Jackson, 1987) or work performance (e.g. Campbell et al., 1974) is argued to be a HRM system that can contribute to organizational effectiveness by managing and controlling organizationally desired role behaviours of employees (to meet the challenges of internal and external environments, Bos-Nehles et al., 2023; Jiang & Messersmith, 2018a). Individuals' work role focuses on the outcome of individuals or attitudinal outcomes (Bowen & Ostroff, 2004b; Liao et al., 2009a; L. H. Nishii & Wright, 2008; Wright & Nishii, 2007; Wright & Ulrich, 2017). Hence, SHRMP focuses on the linkage of HPWS and attitudinal and behavioural outcome of employees to validate HRM-performance nexus.

Mostly stated employee outcomes/individual attitude and behaviours includes employee engagement, organizational commitment, organizational identification, intention to leave, job satisfaction, perceived organizational support, self-efficacy, and coping with change (Sanders et al., 2021). Of the attitudinal outcomes of employees, motivating employee engagement has been emerged as one of the most significant drivers of high performance and achievement in today's dynamic environment and is become essential in gaining a sustainable competitive advantage of institutions (Bhutta & Zafar, 2019; Erdenebileg & Jo, 2021; Saad, Gaber, et al., 2021; Sun & Bunchapattanasakda, 2019). Relative to other work attitude constructs, such as job involvement, job satisfaction, and organizational commitment; engagement provides a multidimensional motivation state and is a broader construct that involves a more holistic and complete investment of the entire or full self in the performance of a task or role (Meijerink et al., 2020; Saks, 2022; Tensay & Singh, 2020). Employee engagement is defined as 'cognitive, emotional, and behavioural energy of an employee directs toward positive organizational outcomes'(Kahn, 1990).

It is found to have a positive relationship with not only individual performance (such as organizational commitment and positive behaviour), but also with organizational performance (example customer satisfaction, financial return Sun & Bunchapattanasakda, 2019). However, practical evidence from Gallup's survey (2012) showed that the average level of employee engagement is only 13% across the world, which indicates that most of the world's employees are disengaged (Aktar & Pangil, 2018). Consequently, some researchers argued that the extant literature show some shortcomings regarding the antecedents of employee engagement (Aktar & Pangil, 2017, 2020; Saad, Labib, et al., 2021; Saks, 2022; Sambrook, 2021b). As employee engagement is a significant outcome of HRM practices in organizations (Markoulli et al., 2017), many scholars have concluded that HPWS has taken the foremost step in enhancing engagement (Jahangir et al., 2024). However, many researchers agreed that few are known about the role of HPWSs as antecedents of engagement (Arefin et al., 2019; C. Bailey et al., 2017; Kim & LePine, 2019; Saks, 2022). We assumed that this gap is due to the following two reasons.

First, although vertical and horizontal fit in strategic human resource management are foundational to the links between a HPWS and organizational performance, little is known about how these two fits interact to affect organizational performance (Han et al., 2019). This clearly shows that in order to have better SHRMP and engagement linkage, SHRMP needs to be understood as it contains two broad types of practices: employment practices and work practice strategies: in other words, an ideal-type market-oriented HR system and ideal-type employee-oriented HR system (Dayarathna, 2019; Meier-Barthold et al., 2023) or performance-and commitment-oriented human resource practices (e.g., Armour, 2015). Researches (Meier-barthold & Alfes, 2023), recommended integrated dual as fit of HPWS that decreases the disengagement of employees.

Second, although management scholars have devoted more to investigating the mechanisms underlying the linkages between HPWS and employee outcomes via cross-level path analyses (Den Hartog et al., 2013; Li & Frenkel, 2017; Liao et al., 2009b; H. Wang et al., 2022), further studies are needed to test the theorized cross-level impact of HPWS on employee outcomes (Jiang & Messersmith, 2018b; Peccei & Van De Voorde, 2019b; Shen et al., 2018). Since the nature of organization is multilevel, it should be considered in the HPWS studies (Renkema et al., 2017). Signal theory also proposes that HPWS rated by line manager has positive impact on the engagement of employees (Connelly et al., 2011). Even if there are some studies in this area, there is no empirical evidence that poses both multilevel and dual fit of HPWS. Multilevel design integrated with dual aspects of HPWS can be seen as organizational ambidexterity that can be accomplished through operational managers' ambidexterity (team level HPWS) to pursue both explorative and exploitative activities (Constant et al., 2020; Joseph et al., 2023; Mom et al., 2019) to engage employees toward creativity and innovation. However, in the HEIs scenario, previous SHRM researchers (such as Alfawaire & Atan, 2021; Emeagwal & Ogbonmwan,

2018; Hamadamin & Atan, 2019) have not touched multilevel design using team-level dual HPWSs in relation to employees' engagement in both creativity and innovative performance. Therefore, this study examines the direct and positive impact of managerial perceptions of dual SHRMP at the department level on the engagement of employees at a lower level.

This study was carried out in the Ethiopian public HEI context because of the following advantages. First, HEIs provide a strategic focus for the development of the country. In Ethiopia, public higher education has the highest rate of return for employees from three key sectors: teacher education, agriculture, and health sciences with estimated increases in earnings of 23%, 15.3%, and 16.3%, respectively (Demissie, 2023). This shows that it is a strategic focus for the development (performance) of the country. Second, Ethiopia's state-led and public-investment-intensive development model supported growth rates of nearly 10 percent between 2004 and 2018, among the world's highest, and drove significant gains in poverty reduction, for example, growth flow from 6.4 percent in FY22 to 7.2 percent in FY23, supported by good harvests and steady service sector growth (Outlook, 2023). This shows high economic development by focusing on the public sector-driven development strategy, which verifies the motivation of researchers to study Ethiopian public HEIs rather than other countries and the private sector.

This study has the following values for its audiences. Theoretically, first, it enhances the application of signal theory in the study of manager-rated HPWSs on the engagement (see Fig 1). That responds the call of researchers to this area (e.g., Guest et al., 2021; Meier-barthold & Alfes, 2023; Taj, 2016; Y. Wang et al., 2020). Second, it helps to bridge the gap of manager-rated HPWS and engagement through signal fit assumption of signal theory (Meier-Barthold et al., 2023), because department head provide through balancing commitment and control-oriented HPWS to employees, then employees become engaged more in the work role. Methodologically, it extends the application of multilevel particularly, two level through team level HPWS to affect engagement of employees. Practically, it enhances HRM implementation through team level oriented HPWS and dual aspect of HPWS.

2. Theoretical Framework and Hypothesis

2.1. Concepts and theoretical framework

The study of SHRMP is all about the value of HRM to the sustainable competiveness of organization. There are many models of SHRMP, including universalistic or best practice, contingency and/or contextual that is somewhat related to best fit or vertical fit, configurational originated as horizontal fit or bundle of HRM practices (Uysal, 2020). Beside to known limitation of universalistic SHRMP model, scholars proposed to focus on both vertical fit and horizontal fit challenges in validating HRM and performance linkage (Armstrong & Brown, 2019). In another words since there is some limitation

in each SHRMP models, an integration of these three main models will give more substantive and comprehensive model of SHRMP (Delery & Doty, 1996). Hence we complemented the advantages of three models to test the integrated model SHRMP.

The first one is vertical fit of HRM that emphasizes on the employees reactions and behaviour to legitimate the stakeholders view. The universalistic approach, which uses mainly financial performance measures, has been complemented with the inclusion of other variables focused on the final purpose, where the contingency and contextual perspectives play a relevant role (Martín-Alcázar et al., 2005). Like to the assumptions of contingency and contextual approach of HRM, HPWS proposes that institutional HPWS first should impact on the employees' attitude and behaviour, thereby achieving organizational goals (Zhu et al., 2018). The casual relationship is firstly HRM impact on the attitudinal outcome then behavioural outcome then operational followed by organizational, financial and other outcomes (Kehoe & Wright, 2013). Currently the most cited attitudinal outcome or employee reactions including employee engagement, organizational commitment, organizational identification, intention to leave, job satisfaction, perceived organizational support, self-efficacy, and coping with change) and burnout (Bednall et al., 2022). Engagement is one of the factor that have been repeatedly pointed out as a possible immediate antecedent of work performance (Arifin et al., 2021; Sambrook, 2021a), rather than job satisfaction and organizational commitment, perceived organizational support (Cignitas et al., 2022). Employees' engagement has been defined as the simultaneous investment of an individual's physical, cognitive, and emotional energy in active, full work performance (Kahn, 1990). It is currently a popular topic within many organizations, given its association with employee performance (Tensay & Singh, 2020) and wellbeing (Christian et al., 2011; Knight et al., 2017). Engaged employees have a high sense of responsibility where they feel that they should enhance their performance for the sake of their organizations (Saad, Labib, et al., 2021; Saks, 2019). Even if researchers have studied that HPWS has impact on the engagement (Saks, 2022; Sambrook, 2021a; Singh, 2019), how to link HPWSs with engagement is not clearly explained yet (Kwon & Park, 2020; Osborne & Hammoud, 2017; Saks, 2022; Sambrook, 2021a). Hence, we considered the following measures to mitigate such knowledge conflict.

Second challenge is emanated from horizontal fit that deals about bundle HRM system. The bundle/ dimensionality of HRM practices show little consensus even in the most recent studies there is presence of complication of HRM practices in horizontal fit understanding (Delery, 1998). In line of this from a review of HR systems research, D. Lepak et al. (2006) highlighted that a wide variety of HR systems exist with labels such as high performance work system, high commitment work system, and high involvement work system but how the selected practices of one of them help achievement of the system's goal (Boon et al., 2019). Hence, here we assume comprehensive HPWS that take in account of some aspects of both involvement and commitment views will handle better outcome. Therefore, we considered

dual HPWS includes performance-and commitment-oriented human resource practices (Armour, 2015) or maintenance and production subsystems (Katz & Kahn, 1878), or performance-and commitment-oriented human resource practices (Kehoe & Wright, 2013) or employee performance and wellbeing oriented HPWSs(Hewett et al., 2018) or "happy" and "productive" workplaces (Cropanzano & Wright, 2001) or ambidexterity (Cao et al., 2020) or commitment- and control-oriente HRM that develops KAS of employees and provides motivation and opportunities to employees for their productivity as well as for their well-being respectively (Gong et al., 2009). Specifically, Godard (2004) claimed HPWS mainly involves two types of practices: work practices help to organize the work (e.g. job design practices including work teams, job enrichment, job rotation; and formal participatory practices, including quality circles or problem solving groups) while employment practices include practices such as sophisticated selection, training, performance appraisal, contingent pay ((Dayarathna, 2019). Similarly, an ideal-type market-oriented HR system exclusively comprises practices directed toward efficiency and competition, like results-oriented appraisals and profit sharing and therefore signals productivity whereas an ideal-type employee-oriented HR system focuses on long-term employment relationships within the organization and is characterized by practices such as internal career opportunities, extensive training and development, employment security and participation and therefore signals commitment (Meier-Barthold et al., 2023). Previously, many researchers employed different number of dimensions of HPWS. But, since out HPWS has dual and comprehensive HPWS view, we considered broadly using 10 HRM practices. Recently, researchers applied 10 dimensional care HPWS with single items and call to employ multiple items of each elements of HPWSs by the perception of department manager (Parent-Lamarche et al., 2023; Saks, 2022). Relying on the most recent work of Meier-Barthold et al. (2023), we applied 10 dimensional HPWSs, including job design, recruitment/selection, training/development, performance evaluations, compensation/rewards, promotion/career, employment security, participation, employee voice/grievance, and information sharing. We replaced employee voice with autonomy, as Tensay and Singh (2020) have argued that autonomy is the best of all practices. But, differently from Meier-Barthold et al. (2023) and Tensay and Singh (2020), we employed multiple items for 10 dual HPWS elements. Hence, we concluded that aforementioned horizontal fit of integrated dual aspects: control oriented and commitment oriented HPWS characterized HPWSs.

Third, once again from contextual approach, the HPWS literature has also pushed along the methodological debate so that much more sensitive to multiple source and multilevel data in HRM studies (Boxall, 2012). In more detailed approach, Townsend et al. (2022) argued line managers can shape the horizontal and vertical fit of HPWS practices to improve employee attitude (Kehoe & Han, 2020). As direct managers of operational employees, line managers are in a position to recognize employees' needs, and can give sense to HRM messages by translating them to the local situation and framing them as solutions in a

way that employees are able to understand (Renkema et al., 2017). When their role compared with HR departments, line managers (managers) may provide a direct social environment for employees (Y. Wang et al., 2021). Therefore, currently, HRM practices implementer is not HRM department, but it is the responsibilities of line manager (L. H. Nishii & Wright, 2008; L. Nishii & Paluch, 2018). Line manager is the best known implementer of HPWS and impact on the engagement of employees (Bowen & Ostroff, 2004a; Sambrook, 2021a). Hence, rather than organizational level managers, department head or line managers can implement HPWS or impact on the engagement of employees. Consequently, integrating with aforementioned literatures, here we assumed the concept of managerial ambidexterity or managerial ability to simultaneously and synergistically pursue both exploitation and exploration roles of employees (Armour, 2015; Constant et al., 2020) can be prevailed using cognitive knowledge of manager towards above stated integrated dual HPWS and can engage employees optimally in sustainable competitive advantages of HEIs.

A range of theoretical frameworks broadly from theories of social exchange including leader-member exchange, perceived supervisor support, the psychological contract, signalling theory, and attachment theory as well as SHRMP theory including resource-based view, HR strength theory, strong' HR system, HR casual chain model, and ability-motivation-opportunity provide a framework in studies conducted at the micro level exploring the line manager impact on perception and attitude, and behaviour of employee (Townsend et al., 2021). Selectively Beurden et al. (2021) forwarded four main communication theories such as HRM system strength, HR attribution, social information processing, and signal theory for the study of relationship from top to down. Similarly, signalling theory, sense making theory, HRM system strength have been used for the explaining the HR communication or relationships between manager and employees in the current SHRMP research world (Trullen et al., 2020a). Particularly, well known recent researchers have mostly recommended signal theory to study manager-rated HPWS on the attitudinal and behavioural outcomes of employees (Guest et al., 2021; Meier-Barthold et al., 2023) because its main assumption is based on the content of signal (HPWS), signaller (line manger), and receiver (employees reaction and perception) (Connelly et al., 2011; Taj, 2016). Hence, we employed signal theory to study the impact of manager-rating about HPWSs on the engagement.

2.2. Signal theory

Information economics theory of Spence (1974) has been extensively applied to study information asymmetry between two parties, occurring as a result of knowledge disparity in a organizational and business contexts (Connelly et al., 2011; Spence, 2002; Stiglitz, 2002), because getting accurate information can affect decision making process of individuals and organization (Taj, 2016). Therefore, the key function of signal theory is reducing of information asymmetry (Spence, 2002). The main

dimensions of signal theory include signaller such as manager who provides information for the receivers (employees) through signals (HPWSs) that needs receivers' attention (Connelly et al., 2011; Taj, 2016). Behaviourally, Bandyopadhyay and Srivastava (2019) argued in line of Bowen and Ostroff (2004a) that when 'HPWSs send strong signals about what strategic goals are most important and what employee behaviours are expected, supported and rewarded relative to those goals; the more likely those goals are achieved'. The assumption of signalling theory, therefore, entails attribution and sense-making to bring forth required attitudes and behaviours ((Becker & Gerhart, 1996; Lado & Wilson, 1994; Wright et al., 1994). In another words, signal theory assumes that line managers send strong HPWS to employees, and then employees respond through attitudinal consequently behavioural outcome (Guest et al., 2021) and other organizational and societal performances.

Consequently, more emphasized one is HPWS as a signal that is sent by line manager and employees reaction (e.g., engagement) (Connelly et al., 2011). Likewise, Y. Wang et al. (2020) discussed Spence's (2002) theory of signalling that concerns ways to reduce information asymmetry between the signaller, or information senders, and information receivers by the way of signalling activities or HPWS (Beurden et al., 2021). In line of this, researchers (Connelly et al., 2011; Meier-Barthold et al., 2023; Meier-barthold & Alfes, 2023) discussed the signalling theory with its assumption of signals, which are the most effective in conveying the signaller's (managers) information to the receiver (i.e., employees) when the signals are characterized by clarity, frequency, intensity, and salience. In another terms, a strong signal reduces room for ambiguity of interpretation and clearly demonstrates the implications of certain attitudes and behaviours (Meyer & Maltin, 2010; Ostroff, 2021). Here, strong HPWS means integrated dual fit of signal or HRM as dual signals sent from management to employees in groups (Haggerty & Wright, 2009). Supporting to this idea Mom et al. (2019) claimed HPWS and organizational ambidexterity has assumed that organizational ambidexterity can be attained through operational manager that pursue both explorative and exploitative or routine and non-routine activities (Adler, Goldoftas & Levine, 1999), fulfil administrative and entrepreneurial role (Probst, Raisch& Tushman, 20110, and combine short- and long-term views (O'Reilly & Tushman, 2013) has positive impact on the engagement. Hence, manager-rated integrated dual HPWSs positively impact on the engagement of employees if and only if there is fit between dual aspects of HPWSs (e.g., Meier-Barthold et al., 2023; Meier-barthold & Alfes, 2023).

Otherwise according to Taj (2016), there are competing interest between department head and employees with inferior HPWSs that provides always looking for ways of cheating and deceiving receivers through false signalling and it causes signals costing (Ndofor & Levitas, 2004). On his extended discussion, Taj argued that continuous false signalling also known as decoupling and it damages signal honesty or signal reliability and credibility (Connelly et al., 2011). Besides from the assumption of signal theory, recent researchers (e.g., Meier-Barthold et al., 2023; Meier-barthold & Alfes, 2023) claimed that unfit of

dual aspect of HPWS leads to disengagement.

2.3. Hypothesis

The debate on how employers can promote employee engagement remains unsettled (Young et al., 2018), and researchers have called for further studies to examine antecedents of employee engagement to improve organizational functioning (Barreiro & Treglown, 2020; Jahangir et al., 2024; Kwon & Park, 2020). Therefore, scholars have proposed HPWS as a main driver of it (Bhasin et al., 2019; Saks, 2022; Sambrook, 2021a). However, researchers concluded that few are known about the role of organizational HPWSs as antecedents of engagement (Arefin et al., 2019). Although many studies have shown that HPWSs have a direct impact on engagement (see Phanwattana & U-on, 2017), there has been limited research examining how HPWSs influence engagement (e.g. Albrecht et al., 2015; Saks, 2022). We supposed that the knowledge conflict about how HPWSs enhances engagement is related with the following two reasons.

First, evidence of methodological issues shows that there is a gap in the relationship between HPWSs and engagement (Huselid, 1995) regarding how to test the HPWS on attitude (El-ghalayini, 2016). Previouse empirical evidence of HPWS direct and positive impacts on the engagement based on the 2040 employees of the Chinese banking industry (Cooke et al., 2019), brewery factories in Uganda (Muzee, 2016), in the small- and medium-sized enterprises of the US (Lartey, 2021) and from the Ethiopian public sector (Tensay & Singh, 2020) data, but their studies are signle level and not include Ethiopian public HEIs. Additionaly, SHRMP should follow orgnizational nature based multilvel study design (Lin & Sanders, 2017; Ostroff & Bowen, 2000; Peccei & Van De Voorde, 2019a; Renkema et al., 2017). Even though multilevel research concepts and strategies have been studied by previous researchers (e.g., Den Hartog et al., 2013; Li & Frenkel, 2017), further multilevel design SHRM research is needed to test the cross-level effects of comprehensive HPWSs on employees outcome (e.g., Shen et al., 2018; Wright & Ulrich, 2017). Such cross-level HPWSs impact on engagement in public HEIs has not been studied by the researchers (Emeagwal & Ogbonmwan, 2018; Hamadamin & Atan, 2019; Siyal et al., 2020). In another sectors for example, Renkema et al. (2017) argued that multilevel organizational HRM policies influence organization-level performance through lower-level individuals' attitudes and behaviours. However, available cross-level studies mostly employed organizational-level HPWS (Xi et al., 2021a; J. Zhang et al., 2018) those are not focused on HRM implementation through team-level HPWS and only few studies are avaialble (Sambrook, 2021b; Trullen et al., 2020a).

The reason why department heads are called HPWS implementer (Trullen et al., 2020a) or sense givers (e.g. Collins, 2022; Nishii & Paluch, 2018; Ostroff, 2021), is due to line managers have judgment over how they implement intended HPWSs (Harney & Jordan, 2008; Nishii & Wright, 2008; Purcell &

Hutchinson, 2007; Vermeeren et al., 2014). Recently, there is a call for research to adapt caring HPWSs based on managers' experiences to study its impact on employee outcomes (e.g., Parent-Lamarche, et al., 2023; Saks, 2022). Therefore, we applied multilevel design particularly manager-rated HPWSs at the department level rather than orgnizational level as it better impacts the engagement of employees at a lower level. However, the impact of manager-rated HPWS on the engagement emerges at upper level (Bowen & Ostroff, 2004a; Connelly et al., 2011). Hence, the engagement of employees will be enhanced in the groups that have more manager-rated HPWS impact.

The extant mechanisms used to explain the underpinning pathways between HPWS and employee behaviours have mainly focused on employees' attitudes (engagement) towards their teams (e.g., Zhang et al., 2013) based on social exchange (Zhong et al., 2016) or attribution (e.g., Van De Voorde & Beijer, 2015)), and signal (H. Wang et al., 2022), theories. But, the application of signal theory to study HR communication on the attitude is rare. Some single level studies are carried using signal theory. For example, Arefin et al. (2019) argued that signal theory (Spence, 2002), as "an environmental cue proposes HPWS signal to employees that organization emphasizes employees contribution, recognises their worth, fosters their development, cares about their skills and knowledge, and helps them to interpreted positively like intended by organization." Using signal theory, organizational opportunity-enhancing bundle and its interaction with the other two bundles (ability-and motivation-oriented HPWSs) had a positive impact on job satisfaction (Nadeem & Rahat, 2021). On the other hand, previously multilevel study using signal theory and data from 86 CEOs, 86 HR managers and 489 employees of 100 enterprises including finance, service, manufacturing and other industries of the Jiangsu, Anhui, Guangzhou, Beijing and other places shows that firm level high commitment work system has impact on the wellbeing of employees at lower level (M. Zhang et al., 2022). At team level, using signalling theory as well as samples of 366 employees and 60 managers from 60 departments, Wang, Zhang and Wan (2022) concluded that cross-level linking department-level HPWS to employee job burnout. And also, using other theory and secondary data from the British National Health Service, evidence shows that a direct positive relationship between organizational HPWP and employee outcomes (job satisfaction and employee engagement) (Ogbonnaya & Valizade, 2018). Differently, this study was based on the 360 employees and 102 department heads of Ethiopian public HEIs to test cross level signal effect of departmental-level HPWS on the engagement. Hence, when department heads provide frequent and unambiguous signal (HPWSs) to employees, employees will respond by the engagement on the organizational intended of actual behaviours; otherwise they will disengage in their team role (see also Bowen & Ostroff, 2004a; Connelly et al., 2011).

Second, the other main challenge for the conflict of HPWS content is argued by Hansen et al. (2019) in line with Lepak and Snell (2008, p. 223), 'How do HR architectures serve as a means of balancing

public and private level behavior in various dynamic environments?' Although researchers have shown a growing interest in the effects of human resource practices on employee attitude, it is hardly studied to examine the effects of the commitment- and control-approaches on employee attitude (Heinsman et al., 2008). According to Walrave et al. (2017), over emphasizing on the control aspects of HPWS, which is called "success trap" with its a strong focus on exploitation, not only may cause in relatively certain returns but also may discourage logn term profit by decreasing of commitment level, and therefore likely undermine the firm's adaptability. In contrast, over-focusing commitment HRM practices have a negative effect in the Chinese context, so it is better to provide both commitment and control HRM practices to enhance engagement of employees (Wright & Ulrich, 2017). Anitha (2014) suggested that employee engagement reflects two essential elements: (a) willingness to contribute to organizational success and (b) a positive and energized employee who is at a motivational state (Eldor & Harpaz, 2016). Thus, managers and organizations must be simultaneously ambidextrous to balance the control- (evolutionary change) and commitment oriented HPWSs (revolutionary change) associated with alignment and adaptability (Mueller et al., 2020). Similarly, this dual HPWS influence people's dimensions in the management of people, acquiring their services, developing their skills, motivating them to higher levels of performance, and maintaining their commitment (Phanwattana & U-on, 2017; Shin & Konrad, 2017). Although researchers have shown a growing interest in the effects of human resource practices on employee attitude and behavior, it is hardly studied to examine the effects of the commitment- and control-approaches on employee attitude (Heinsman et al., 2008). Hence, both peerformance orineted and commitment oreinted HPWS should be focused by the department head to engage employees on both creative and innovative behaviors of the university.

In summary, we hypothesized that department-level dual HPWS relates positively to the engagement of employees and that at the between-group level, engagement of employees (lecturers) becomes higher in departments in which manager-rated HPWS is higher.

Hypothesis-1: manager-rated dual HPWS at the department level have a positive impact on employee engagement at the employee

3. Research Method and Materials

3.1. Study design, procedure and participants

To reduce single-source bias and ensure data reliability, we collected data from multiple sources including the department heads and employees. Specifically, the data of manager-rated HPWS were collected from department heads, whereas engagement was collected from employees.

We selected three samples from 42 public universities, including Worabe, Wachemo, and Wolaita Sodo,

using simple random sampling. But, the selection of sample at this level is not that much worrying because, upper level sampling starts at department level. Second, we applied strata sampling technique to select departments based on the college, institution, and school categorization of university. Then, five employees were selected from each department using simple random sampling. The department head completed the questionnaire at the departmental level.

The employees' questionnaire was first sent by the department heads, but most of the employees returned using phone numbers and personally to ensure their confidence. The department heads of many groups endorsed me in collecting questionnaires from the employees. The respondents were assured of confidentiality, and that nobody from the universities would have access to their individual responses. To further reduce potential psychological stress, we did not include any questions pertaining to individuals' names and departments in the employee surveys. Then, their specific department was filled out at the time of collecting the questionnaire, since specification of department/group is required in the multilevel research data analysis.

Researchers have planned to collect 90% of departments from three universities of Ethiopian public HEIs: Worabe, Wachemo, and Wolaita Sodo. Therefore, 149 and 745 questionnaires were distributed to department heads and employees, respectively. A total of 109 department heads and 380 questionnaires were collected. After removing unmatched questionnaires from both heads and employees, 102 and 360 questionnaires, respectively, were included. Thus, 102 (68.45%) department heads and 360 (48.32%) employees responded. The overall response rate was 51.68%, which is higher than the average reported in the literature for multilevel studies, specifically from 53% in Snape and Redman (2010) and 47% in Takeuchi et al. (2009). Overall profiles of respondents are listed below in the Table I.

3.2. Questionnaire development

Three phases of tool development were carried out. In the first phase, face and content validity were assessed by experts. We followed the same procedures used in the previous management work of Koednok and Sungsanit (2018). Accordingly, we contacted 3 doctors (PhD degree holders) and assistant professors who had many publications. The second phase of tool development was carried out to translate and redesign the questionnaire, including the word order and layout. The translation process was carried out by adapting the Brislin translation model (Brislin, 1970) procedure. Because Amharic is the dominant of the official languages of commerce and administration in Ethiopia, we translated it to Amharic. In the third phase, we employed a pilot test using 50 employees from the Hossaina polytechnic college.

3.3. Measurements

Manager-rated HPWS: Manager-HPWSs were measured using 10 measures with 54 items. We operationalized in line with Meier-Barthold et al. (2023), HPWS consisted of 10 practices including job design, recruitment/selection, training/development, performance evaluations, compensation/rewards, promotion/career, employment security, participation, employee voice/grievance, and information sharing. We replaced employee voice with autonomy, as Tensay and Singh (2020) have argued that autonomy is the best of all practices. Then, items were developed based on related literature. In total, using 10 measures with 54 items of the MR-HPWS were rated using a five-point Likert scale. The scale's Cronbach's coefficient was .924.

Employees' engagement: Employee Engagement: We measured employee engagement on a 12-point Likert scale (1 = completely disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = completely agree) that was equally distributed across the three factors (emotional, behavioral, cognitive) of Kahn's (1990) engagement theory (Shuck et al., 2017). A sample item is 'I feel positive about my work.' The scale's Cronbach's coefficient was .856. To ensure that the engagement was acceptable for aggregation at the department level based on Bliese (2000), we assessed the ICC. The ICC1 value is .207, and the ICC2 is .823. Therefore, the engagement measurement is valid for aggregating at between levels.

Controlling variables: At the individual level, we controlled for gender, education, marital status, work experience, and income in the analyses due to their potential impacts on employees work outcomes Liao et al. (2009). At the departmental level, we controlled for departmental managers' age, gender, education, income and in line of Nishii and Wright (2008) including marital status, and experience because these factors may influence how implement HPWS in their departments.

3.4. Analysis method

First, descriptive stastics, prliminary anlysis and confrimatory factor anlysis was examined to attain the assumptions of multilvel anlysis and validity and reliablity test. Then, multilevel path analysis was used to test the MSEM, which uses a full information maximum likelihood estimator with unbalanced level-1 sample sizes for all analyses, and the weighted least squares mean and variance-adjusted estimator to test model fit based on chi-square measures using R version 4.3.1 (2023-06-16 ucrt) package lavaan 0.6.16. To achieve precision, researchers generated bootstrapping results for a multilevel model using the percentile method (Preacher & Selig, 2012).

3.5. Inspecting the assumption of multilevel analysis

Since MSEM research has assumptions, we first checked these assumptions. Hierarchical linear modelling analysis necessitates consideration of some basic assumptions before proceeding to the analysis. The first method addresses missing data. Second, assessment for normality and detection of any potential

outliers of variables, as well as aggregation, were carried out.

Missing data: Based on the missing data assessment, two variables (recruitment item number 6 and career development number 1) that missed more than 10% of the data were removed. Then, less than 10% of the missing data were substituted by a series mean. When using mean substitution, missing values are replaced with the overall mean and imputed values are treated as 'real' observed values (de Goeij et al., 2013).

Outlier detection: Outlier identification was accomplished by first employing univaraite, followed by multivariate detection methods (Hair et al., 2010). Unfortunately, three variables with outliers were caused by errors in data entry and adjusted accordingly. Because the standard deviation was not greater than the mean, there were no outliers (see Table VII).

Multicolinearity was not a problem in the data because the correlation coefficient value was less than 0.85 is statistically acceptable (Field, 2005; see Table VIII).

Normality test: Second, the normality test is a precondition for testing multiple levels. One of the most important assumptions that need to be checked is normality, which refers to the shape of data and it can be assessed by graphical and/or statistical methods (Tabachnick & Fidell, 2014). First, statistical tests were employed to describe normality using skewness, and kurtosis (Hair, et al., 2010; Table VII). Another statistical normality test were Kolmogorov-Smirnov and Shapiro-Wilk tests applied, because skewness and kurtosis tests are sensitive in large samples (Hair, et al., 2010), and they became significant in large samples, while departure from normality was not that much (slightly small). Second, we employed one of the most robust visual measures of normality called a normal probability plot.

The Shapiro–Wilk test is a more appropriate method for small sample sizes (<50 samples), although it can also be applied to a larger sample size, where the Kolmogorov–Smirnov test is used for n ≥50. Since our sample size was 360, the Kolmogorov-Smirnov test better predicted normality. According to Table II, when the P-value is greater than 0.05 (insignificant), 'Ho' is accepted, which means that the data are normally distributed (see also Fig. 2).

According to the two plots above, the assumption of normality is valid (see Fig 2).

Reliability test: we tested ICC1 and ICC2 and ICC3 or Cranach's alpha. According to Table III, ICC1 is .270; ICC2 is .823 whereas ICC3 is .856 based on the above jamoi software output. The scores for all ICCs were greater than 0.75, indicating excellent consistency.

The standardized beta values of the factors were all greater than the cut value of .5 (Hair et al., 2010) that verified the significance of indicator reliability for engagement variables (see Figure 3). Moreover,

composite reliability and alpha were also greater than 0.7, indicating that the measurement of engagement was reliable. Construct validity (convergent validity) is significant because AVE is greater than 0.5 and CR is greater than .6 (Fornell & Larcker, 1981; Table V).

Third, convergent validity was established by calculating the absence of common method bias using statistical test tools, a post hoc procedure using Harman's one-factor test (or all items are loaded into one common) (Harman, 1960), to show that the total variance explained less than the recommended threshold value of 50%. The cumulative explained variance in engagement with components was 33.679% (see Table VI). Moreover, before data collection we employed procedural method through clarifying jargon words, and the secrecy of data from anybody of university.

4. Results and Discussion

4.1. Result

4.1.1. Preliminary analysis

According to Table VII, the means, standard deviations, and inter-scale correlations of all variables at the employee level were assessed. For variables measured at the higher level, we assigned their scores to lower-level subjects, such that the higher-level variables were identical for the subjects within each higher-level unit. For example, we assigned a department-level variable, manager-rated HPWS, to individual employees within the department to calculate its correlations with other individual-level variables.

As shown in Table VII, the skewness and kurtosis tests show that the data are normally distributed, with the exception of one variable. According to Byrne (2010) the normality of data can be expressed using average values of -2 and +2 for skewness, and -7 and +7 for kurtosis.

As shown in Table VIII, inter-scale correlations show the expected direction of association and, with a few exceptions, are all significant at the p, 0.01, and p, 0.05 levels. Managerial-rated HRM was positively and significantly related to engagement ($r = .215$, $p < .001$). Therefore, descriptive analysis was conducted to test the main hypotheses.

4.1.2. Hypothesis testing

To investigate whether positive manager-rated HPWSs had a direct effect on employees' engagement, a path model was tested using R version 4.3.1 (2023-06-16 ucrt) with the help of lavaan 0.6-16 FREE software! The results are presented below in Table IX and X.

According to Table IX and X, ICC=.56 shows that engagement has strong multilevel effect as it greater than 0.4. According to Figure 4, the result indicates that a positive manager-rated HPWSs predicted engagement significantly (β =.349, SE=.125, β* =.293, p =.005 at confidence intervals □.104, .593□ produced by the percentile of .95 at the upper level. Moreover, the coefficient of determination (R2) is a measure of the model's predictive power or it is the amount of variance in the endogenous (engagement) latent variables due to structural model explained by the exogenous (HPWSs) variable (F. Hair Jr et al., 2014). Where the higher the R2 coefficient shows the better the engagement is explained by the HPWSs in the structural model (F. Hair Jr et al., 2014). Accordingly, the total amount of variance in engagement accounted for by positive manager-rated HPWS was 8.6% (R2 =.086) (see Table IX). The suggested value of R2 for the behavioural sciences can be assessed as 0.26 (large effect), 0.13 (moderate effect), and 0.02 (weak effect) (Cohen, 1988). Because R2 values for employee engagement is less than 0.13, the impact of HPWSs on the engagement is weak. Still, the model of this study proved the model-data fit (see Table IX).

4.2. Discussion

To enhance organizational performance, it is better to focus on HRM outcome/employee outcomes, because it has impact on both employees and organizational performances (Bowen & Ostroff, 2004a; Liao et al., 2009a) So that SHRMP impacts on the HRM outcome including attitudes (e.g., engagement). According to a number of reviewers (see also Andrianto et al., 2022; Cooke et al., 2019; Gürhan Uysal, 2020) HPWS has been synthesized as it impacts employees' outcome/engagement. Even if previous studies (Alfes et al., 2021; Saks, 2022) support that strong effect of HPWS on the engagement, their study is focused on the employees' perception of HPWS impact on the engagement. That is single level study whereas the organizational nature is multilevel in which employees are nested within team or organizational level (Renkema et al., 2017). Hence, recently researchers are calling to employ manager-rated HPWS impact on the engagement (e.g., Sambrook, 2021b). While previous multilevel researches were conducted at organizational level HPWS (Xi et al., 2021), we verified the effect of departmental level HRM practices on the employees level outcome (see Den Hartog et al., 2013; Li & Frenkel, 2017; Liao et al., 2009a; H. Wang et al., 2022), particularly engagement. Hence, this study somewhat similar with other study (Ogbonnaya & Valizade, 2018) that reveals the positive impact of firm level HPWSs on the engagement of employees.

On the other hand, researchers call to consider HPWSs internal fit to better impact on the engagement. Researchers have studied this assumption by blending duality/ambidexterity concepts in the manager-rated HPWSs. The findings of this research show the direct effect of manager-rated SHRMP on the engagement of employees that can be attained when HPWSs considers both the exploitive and

explorative aspects of SHRMP. Therefore, this implies cross-level effect of manager-rated HPWS on the engagement is positive that is somewhat similar with the previous studies (see Den Hartog et al., 2013; Li & Frenkel, 2017; Liao et al., 2009a; H. Wang et al., 2022). Particularly, this study somewhat similar with other studies (with organizational level HPWS, Ogbonnaya & Valizade, 2018). However, the effect is weak with R2 is less than 0.13 (Cohen, 1988). Therefore, cross-level impact of HPWS on the engagement is weak that is opposite to the strong relationship of perceived HPWS and engagement (Tensay & Singh, 2020).

4.3. Theoretical and research implications

This study has some theoretical and methodological importance as discussed in the following. First, it increases the application of signal theory to study the impact of manager-rated HPWS on the engagement. Signalling theory has been predominantly used in the areas of entrepreneurship, financial economics, labour market, organizational behaviour and strategic management, but it is rare to understand how organizations send signals to influence the reactions of employees to the organization (H. Wang et al., 2022). Signal theory is recently employed in single level studies (Nadeem & Rahat, 2021), and multilevel studies (H. Wang et al., 2022; Xi et al., 2021b; J. Zhang et al., 2018), but still it is not that much applied in relation with social exchange theory, psychological contract and other exchange and occupational health theories. Therefore, this study enhances the application of signal theory particularly, to the cross-level impact of manager-rated HPWS on the engagement. Our study also supports the assertion that line managers' HPWP implementation perceptions impact employee attitudes and behaviour (Sikora et al., 2015). This responds the call to employ manager-rated HPWS on the attitude of employees (Parent-Lamarche et al., 2023; Saks, 2022).

Second, it will pave the way for many researchers who are ambiguous about how managerial-level HRM considers context by considering signal theory assumption of signal (HPWS) fit of commitment- and control-oriented HPWSs (Alfes et al., 2021; Meier-barthold & Alfes, 2023). This research supports SHRMP with employment practices and work practices strategies or performance-and-commitment-oriented human resource practices (e.g. (Armour, 2015; Constant et al., 2020; Mom et al., 2019) at the department level has a positive cross-level impact on the engagement of employees at lower level but emerges at upper level.

Third, it increases the application of multilevel HPWS on the engagement as it attends the organizational nature in which employees are nested within the department of Ethiopian public HEIs. That may be response for the call of multilevel SHRMP research (Jiang & Messersmith, 2018b; Peccei & Van De Voorde, 2019b; Shen et al., 2018).

4.4. Practical implication

In addition to the aforesaid theoretical implications, this dissertation has implications for managers. Our study revealed that the focus of manager on the dual HPWS has positive impact on the enhancement of engagement of employees. Many researchers stressed that commitment-oriented HPWS has positive impact on the engagement whereas control-oriented has negative. But, some control-oriented HPWS such as performance-oriented payment has positive impact on the engagement because they foster competition that has win and loss among employees. Besides, since, line managers are implementers or sense makers of employees, HPWS should be focused by the department heads rather than president, vice presidents, directorates, HRM personnel of the University (Guest et al., 2021). Hence, we propose that HEIs have to focus both on the department head (Sambrook, 2021b) and duality of HPWS (e.g. Alfes et al., 2021; Armour, 2015; Constant et al., 2020; Meier-barthold & Alfes, 2023; Meier-Barthold et al., 2023; Mom et al., 2019) to enhance the engagement of employees in their job role.

4.5. Limitation and future research implication

This research has above mentioned values, but that means not it is free of limitation. First, according to signal theory, our study was carried to study the direct impact of manager-rated HPWS on the engagement; however, the impact is weak. Hence, we recommend that the signal theory proposition of the employees' perception towards the same HPWS with department head between manager-rated HPWS and engagement (e.g., Connell, et al., 2011; Taj, 2016), because employees' interpretations of HRM systems, rather than managerial-rated SHRMP, have a more direct influence on employee outcomes (e.g., Beijer et al., 2021; Bowen & Ostroff, 2004b; Den Hartog et al., 2013; Kehoe & Wright, 2013; Li & Frenkel, 2017; Liao et al., 2009a; L. Nishii et al., 2008; Van Rossenberg, 2021; Y. Wang et al., 2020).

Second, we studied integrated dual using the measurements with mixed items that is difficult to differentiate commitment and control-oriented HPWs. Hence, future researchers have to employ differentiated constructs to and their fit effect on the engagement of employees to better understand the nexus (Meier-barthold & Alfes, 2023; Meier-Barthold et al., 2023).

Third, we applied only two level of SHRMP. However, in the real situation, top level managers and HRM personnel affect line manger then line manager affects employees' perception and reaction (Townsend et al., 2022; Trullen et al., 2020b). Hence, we propose three level design of multilevel study.

Fourth, this research was conducted only with the academic staff of three Ethiopian public HEIs. This study has some limitations in terms of its generalizability. To bring about more rigorous outcomes, further researchers should include non-academic staff and/or some more public and/or private universities.

Furthermore, research has been conducted in developing countries, particularly Ethiopia. Further research should be conducted in other developing and/or developed countries to increase the rigor of measurement.

5. Conclusion

The linkage of HRM with performance is contradicting yet in SHRMP, due to lack of strategic measurement of performance and comprehensive of HRM practices or HPWS. Consequently, researchers have been motivated to search for strategies to gain an in-depth understanding of SHRMP and performance linkages through HRM outcome (attitude of employee particularly engagement) and team level dual HPWS. We conclude from this research that the fit of integrated dual aspects of HPWSs have a direct and positive impact on employees' engagement. We believed that will provide more extensive view of SHRMP.

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Data availability

The datasets generated during and/or analyzed for the current study are not publicly available due to confidentiality agreement with participants, but are available from the corresponding author on reasonable request.

Ethics Statement

A written letter was provided to legitimate for the selected universities with its reference number SMPA/471/06/2015E.C. was provided to us. Signed consent from each university academic vice president or academic affairs directorate had been gotten and also written participant consent for participation was provided for each respondent as cover page.

Authors Contributions

All the three authors (Sheref Betabo Gogsido, Demis Alamirew Getahun, Zerihun Kinde Alemu) were engaged in framing of the concept, administrating of data collection, analysis, discussion, forwarding of implications and limitations of the study. Finally, we have agreed on the manuscript to be published.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Discloser of interest

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Appendix

Table I: shows demographic profile of department heads and lecturers

Demographic profile	Scales	Department heads		Employees lecturers	
		Figure	Percentage	Figure	Percentage
Gender	Male	86	84.31	265	73.62
	Female	16	15.69	95	26.38
Age	18-25	5	4.9	40	11.11
	26-35	61	59.80	275	76.39
	36-45	26	25.49	35	9.72
	46-55,	6	5.82	6	1.67
	56-60	4	3.82	4	1.11
Marriage status	Married	77	75.49	242	67.22
	Unmarried	25	24.51	110	30.56
	Divorced	-	-	8	2.2
Educational status	BA.	5	4.90	21	5.83
	Masters	64	62.74	315	87.50
	Asst. prof. & masters	25	24.51	19	5.28
	Asst. prof. & Dr.	8	7.84%	5	1.39
Work experience	2-5	27	26.47	204	56.67
	6-10	44	43.13	109	30.28
	11-20	21	20.59	36	10
	Greater than 21	10	9.8	11	3.06

Table II: shows test for Normality of residuals

Test	Statistics	P
Kolmogorov-Smirnov	0.0656	0.091
Shapiro-Wilk	0.9472	< .001

Table III: Intraclass Correlation Coefficients for the engagement

Model	Measures	Type	ICC	Lower C.I.	Upper C.I.
one-way random	Agreement	ICC1	0.270	0.241	0.303
two-way random	Avg. Agreement	ICC2k	0.823	0.789	0.852
two-way fixed	Avg. Consistency	ICC3k	0.856	0.837	0.874
two-way fixed	Avg. Consistency	ICC3k	0.856	0.837	0.874

Table V shows reliability indices

Variable	α	ω_1	ω_2	ω_3	AVE	CR
Engagement	0.826	0.827	0.827	0.827	0.616	0.834

Table VI: shows Harman's one-factor test

Total Variance Explained						
Factor	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.701	39.177	39.177	4.041	33.679	33.679

Table VII: shows descriptive Statistics

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Marriage	1.74	.520	.270	-.232	.129	-.365	.256
Education	3.04	.485	.235	.846	.129	4.071	.256
Work_expreince	2.78	.900	.810	.712	.129	-.164	.256
Salary	5.02	.453	.206	-.989	.129	6.936	.256
ENGM	3.5564	.80131	.642	-.158	.129	.001	.256
rHPWS	3.6196	.53244	.283	-.246	.129	.226	.256
Valid N (listwise)	N=360						

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Macroeconomic Policy & Industrial Sectors Productivity Determinants of Economics Growth in Ethiopia

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Abstract

Though efforts have been made to raise policy instruments in Ethiopia, still sectoral efficiency has not been suitably improved. Hence, there are several ways of macroeconomic policy instruments, which currently have been utilized to measure the output of industrial sectors are getting better attention. Then, this study aim was to analyze macroeconomic policy determinants of industrial sectors' output, multivariate time series VAR were formed as econometric models. Besides, World Bank and National Bank of Ethiopia were major sources of research data. Finally, the finding of the study revealed that macroeconomic policy variable were not active for the industrial sectors output. In fact, industrial sectors have been implemented with the combined effort of domestic saving money supply and fixed capital formation. So, macroeconomic policy instruments forgiven currency and domestic saving money supply should be run in the manner by which they contributing to output growth of industrial sectors in Ethiopia.

Keywords: Macroeconomic Policy, Economic Growth, monetary policy

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1. INTRODUCTION

The fundamental question economic growth has concerned researchers is why countries grow at different rates. The empirical literature has come up with a numerous explanation of cross-country difference with factor accumulation, resource endowments, macroeconomic policies effectiveness, macroeconomic stability, educational ability, institutional change, legal system effectiveness, trade openness, and ethnic and religion diversity (Hanushek & Wobmann, 2007): Gatykaev & Voronetskyy, 2018: Anastasios& Panayotis, 2021: Upreti, 2015). One critical factor that has begun to receive considerable attention is the role of macroeconomic policies on industrial sectors output growth. Mainly, many studies emphasized on addressing the issues country specific and cross-country studies have identified which policies virables affect INDP in the target variable of saving, investment inflation, foreign trade etc. (Beth and George, 2017).

Ethiopian economy is dominated by smallholder subsistence agriculture. The industrial sector in Ethiopia including construction sector still contributes the lowest share of national RGDP. For example, the ratio of industry to GDP in 2018/19 was 28% compared to 32% of agriculture and 40% service sector (NBE, 2019/20). Moreover manufacturing sector is the main perspicacity source of many developed and developing country's economy. However, the low contribution of the manufacturing sector in Ethiopia GDP is also acknowledged to be the common feature of most developing countries especially found in Sub Saharan African countries. When assessing the manufacturing sector in Ethiopia against other economies, the growth rate of manufacturing value added in 1998 & 2003 were 4.2% and 4.6%, respectively. These figures were much lower compared to the averages of 7.8% and 6.4% for other Africa LDC and; and 5.7% and 4.1% for South East Asian countries Developing nations as a whole (Rao and Tesfahunege, 2015).

Several literatures also confirmed that infrastructure contributes to motivating economic growth by increasing output facilities (Sarhe, 2019). In Ethiopia, however, the main challenges industrial sector even to those located within Industrial parks include shortage of power and water supplies, information communication, and transportation facilities (Zhang et.al, 2018). Therefore the distribution of manufacturing industry in Ethiopia is biased towards the capital city Addis Ababa and its peripherals due to better infrastructural & market access (Rao & Tesfahunegn, 2015). However, focusing sufficient fund to industrial investment; human capital, and infrastructure should be the government's priorities to develop the industrial sector.

From the foregoing literature, the effect that macroeconomic policy instruments on industrial output is depending on how the policies are expansionary or contractionary. There are many previous kinds of literature that investigate the impact of macroeconomic policies to industrial sectors output growth

in many cases. In Ethiopia, however, studies the focus on the link between macroeconomic policy instruments and industrial sectoral output growth are too limited. Then, the significance this thesis leading objective to investigate empirically the impact of key macroeconomic policies fiscal policy, monetary policy, and trade policy virables plus technology renovation on industrial sectors output growth to fill the gap during the period 1980/81-2020/21.

Similarly the political institution and policy concerns will be covering the study period. Later, prior to examining the link between key determinants of industrial sectors output policy virables were identified from empirical literature based on availability of data for the time span covered in this thesis during the study period. The methodology is that multivariate vectors autoregressive (VAR) time series econometric techniques will be empolyed in this study, The remainder of the paper is organized as section two deals research methodology. It also empirical analysis and conclusion policy implication are presents in the section three and four separately.

2. Research Methodology

2.1 Data source, type and research method

In this section will employ the VAR Models. research method namely type and sources of data; descriptive statistics, empirical model specification and estimation techniques will be used. The data in this time series macroeconomic data covering from the period 1980/81 to 2020/21 for Ethiopia regarding 2010/11 as a base year[1], the data sourced have secondary source from National Bank of Ethiopia (2021), & World Bank's World Development Indicators (2022).

2.2 Model specification and Description of variables

In macroeconomics aggregate production functions are describes the technical link between transforms inputs into outputs. The general production function is written as the next equation;

$$Y_t = f(A_t, L_t, K_t) \text{ ---------- (3.1)}$$

The aggregate production function in equation (3.1) links industrial sectors output (INDP), denoted by Yt to two factors of production, the size of the labor force (Lt), which is a measure of human capital and the domestic capital stock (Kt) in period t as well as At' apprehensions the output factor of technology or any other factor. Thus, taking log transformation of real INDP, labour force, and domestic capital in equation (3.1) yields changed to the production function as:

$$\log Y_t = \log A_t + \alpha \log L_t + \beta \log K_t \text{ ---------- (3.2)}$$

1 Fiscal year in Ethiopia begins July 1 and ends June 31

However, the selection of the macroeconomic variables to be used based on theoretical and empirical literature, were substituting the equation (3.2) readjusting for the order of the variables yields the following log-liner equation on the macroeconomic policies determinants of industrial sectors output growth model as the next equation.

$lnINDP_t=\beta_0+\beta_1 lnHC+\beta_2 lnDT_t+\beta_3 lnNKF_t + \beta_4 lnBCP_t +\beta_5 lnIR_t+ \beta_6 lnREER_t+ \beta_7 lnBD_t + \beta_8 lnOPN_t + \beta_9 lnINF_t + E_t$----------(3.3)

ln $INDP_t$=industrial sectors output growth

$lnIR_t$ =interest rate

lnHCt= Human capital

$lnREER_t$ = Real effective exchange rate

DT_t=Digital technology

$lnBD_t$ budject defect

$lnNKF_t$ = net capital formation

lnOPNt =Trade openness

lnBCPt=Bank credit to the private sector

$lnINF_t$= inflation at the time t

2.3 Estimation procedure

The estimation technique of this research it covers unit root test and structural break. Besides, we will employ Determining Lag Order criteria, co-integration test, error correction method and Grange causality test, Diagnostic Tests and finally this study explore by SVAR analysis.

2.3.1 Unit root test

The study by Nkoro and Uko(2016) determine the stationarity test is the first step in time series analysis is used to identify the order of integration each variable in the model is I (0), I (1), As these study Augmented Dickey Fuller (ADF) test is we will use to indicate the properties of time series (Dickey and Fuller, 1979; 1981) by using the models (a-b) in following equation:

$$\Delta Y_t = \alpha_1 Y_{t-1} + \sum_{i=1}^{n} \alpha \Delta Y_t + e_t \text{(Model does not have trend and intercept)----- (3.4a)}$$
$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \sum_{i=1}^{n} \alpha \Delta Y_t + e_t \text{(Model with intercept only)---------- (3.4b)}$$
$$\Delta Y_t = \alpha_0 + \alpha_{1t} + \alpha_2 Y_t^{-}{}_{-1} + \sum_{i=1}^{n} \alpha \Delta Y_t + e_t \text{(Model with trend \& intercept)--- (3.4c)}$$

Where: ‘Y’ a vector for all-time series variables under consideration in a particularly regression model; ‘t’ is a time period, ‘Δ’ is the first difference operator, ‘α_0’ is a constant, ‘n’ is the optimum number of lags. However underling the Phillips and Perron (1988) PP unit root test we will use as a triangulation measure the limitations of Augmented Dickey Fuller unit root test.

$\Delta Y_t=\alpha_0+\alpha Y_{t-1}+e_t$…….... (3.4d)

Besides the study by (Zivot & Andrews (1992) allowed structural break to endogenous unknown break in the series will reduce the bias of unit root tests and they introduced an endogenous break in the model of these study models are Model A and model B allow for a change in the intercept and in the slope, respectively, while model C allows for a change in both intercept and slope.

$$y_t = \mu + \alpha y_{t-1} + B_t + \theta DU_t + \sum_{i=1}^{k} c_i \Delta y_{t-i} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.4e)}$$
$$\Delta y_t = \mu + \alpha y_{t-1} + B_t + \gamma DU_t + \sum_{i=1}^{k} c_i \Delta y_{t-i} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.4f)}$$
$$\Delta y_t = \mu + \alpha y_{-1} + B_t + DU_t + \theta DU_t + \gamma DU_t + \sum_{i=1}^{k} c_i \Delta y_{t-i} + \varepsilon_t \ldots\ldots \text{(3.4g)}$$

Where the intercept dummy DU_t=1 if t>T_B and zero otherwise, the slope dummy DT^*_t = t - T_B, if t > T_B and zero otherwise. In equations (3.4e-3.4g), the null hypothesis of no break against the alternative hypothesis that the series is break tested.

2.3.2. Determining the VAR Lag Length Selection Criteria

Estimating the correct lag length to use the number of parameters estimated (1 +kp) which increases with the number of variables (k) and number of lags (p) and the AIC: HQ and SIC to determine the lag length of VAR model is representing by the following equation:

$$AIC(p) = \ln\left|\sum(P)\right| + \frac{2}{T}pk^2$$
$$HQ(p) = \ln\left|\sum(P)\right| + \frac{2\ln\ln T}{T}pk^2$$
$$SIC(p) = \ln\left|\sum(P)\right| + \frac{\ln T}{T}pk^2$$

Where T is the sample size and $\sum$-(P)=$T^{=1}\sum$(t-1)^T$\hat{U}_t\hat{U}_t$ hence, the lag selection will be created on the lowest value of the minimum lag value for AIC, HQ and BIC selection criteria.

2.3.3. Cointegration Tests

The multivariate VAR model necessary measure of the Johansen (1988) cointegration analysis allow the long-term link among their dependent and independent variables as the next equations.

$Y_t=\alpha+A_1Y_{t-1}+A_2Y_{t-2}\ldots,A_pY_{t-p}+\varepsilon_t$ …… (3.5a)

WhereY_t (k x1), the vector of endogenous variables is α is a k x 1 vector of constant, the intercept, and, $A_1\ldots A_p$ are the coefficients of the lags order p (a time-invariant k x k matrix), While ε_t is white noise (k x 1 vector of error) or unobserved error term. The purpose of this test is to determine whether a group of non-stationary series is cointegrated or not. as next equations,

$Y_t=A_1Y_{t-1}+A_2Y_{t-2}\ldots,A_pY_{t-p}+\beta X_t+\varepsilon_t$ …… (3.5b)

Where Y_t is a k -vector of nonstationary I (1) endogenous variables; X_t is a d -vector of exogenous deterministic variables; $A_t \ldots A_p$, and β are matrices of coefficients to be estimated and E_t is a vector of innovation that may be contemporaneously correlated but uncorrelated with their own lagged values and all of the right hand side variables.

Hereafter we can use the most popular tests for co- integration are two likelihood ratio (LR) test statistics are the trace test and the maximum eigenvalue test suggested by Johansen (1991). Trace Test Statistic: (λtrace) as suggested by Johansen (1988 & 1991) can be specified as:

trace(r) = -T∑_(i=r+1)klog⁡(1-λ_i)…… (3,5d)

Where λ_i is the ith largest eigenvalue of matrix □ and T is the number of observations. In the trace test, the null hypothesis is that the number of distinct cointegrating vector(s) is less than or equal to the number of cointegration relations (r).

Maximum Eigenvalue Test as suggested by Johansen (1988) the null hypothesis of exactly r cointegrating against the alternative of r + 1 cointegrating relations with the test statistic:

τ_{max}= -Tln(1-λ_r(+1))……(3.5e)

Where the, λ_{r+1} is the (r+1)th largest squared eigenvalue. In the trace test, the null hypothesis of r □ 0 is tested against the alternative of r+1 cointegrating vectors.

2.3.4. Vector Error Correction Model (VECM)

The VECM has cointegration relations made on the long-run behavior of endogenous variables allowing for short-run adjustment dynamics as the follows equations:

$$\Delta X_t = a_0 + \lambda_1 EC^1_{t-1} + \sum_{i=1}^{m} a_i \Delta X_{1-i} + \sum_{j=1}^{n} a_j \Delta Y_{t-j} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots (3.6a)$$

$$\Delta Y_t = \beta_0 + \lambda_1 EC^2_{t-1} + \sum_{i=1}^{m} \beta_i \Delta Y_{1-i} + \sum_{j=1}^{n} \beta_j \Delta X_{t-j} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots (3.6b)$$

Maximum Eigenvalue Test as suggested by Johansen (1988) the null hypothesis of exactly r cointegrating against the alternative of r + 1 cointegrating relations with the test statistic:

τ_{max}= -Tln(1-λ_r^(+1))……(3.5e)

Where the, λ_{r+1} is the (r+1)th largest squared eigenvalue. In the trace test, the null hypothesis of r = 0 is tested against the alternative of r+1 cointegrating vectors.

2.3.4. Vector Error Correction Model (VECM)

The VECM has cointegration relations made on the long-run behavior of endogenous variables allowing for short-run adjustment dynamics as the follows equations:

$$\Delta X_t = a_0 + \lambda_1 EC^1_{t-1} + \sum_{i=1}^{m} a_i \Delta X_{1-i} + \sum_{j=1}^{n} a_j \Delta Y_{t-j} + \varepsilon_{1t} \quad \text{..... (3.6a)}$$

$$\Delta Y_t = \beta_0 + \lambda_1 EC^2_{t-1} + \sum_{i=1}^{m} \beta_i \Delta Y_{1-i} + \sum_{j=1}^{n} \beta_j \Delta X_{t-j} + \varepsilon_{1t} \quad \text{..... (3.6b)}$$

Where the first difference operator EC_{t-1} is the error correction term is lagged one period; λ is the short-run coefficient of the error correction term($1< \lambda< 0$); and ε is the white noise.

2.3.5 Granger Causality Test

According to Gul & Ekinc, (2006) investigation the overall specification of Granger causality test in a bivariate (X, Y) understanding can be articulated for instance the following equation:

$$Y_t = a_0 + a_1 Y_{t-1} + \ldots + a_i Y_{t-i} + \beta_1 X_{t-1} + \ldots + \beta_i X_{t-i} + \mu \text{..... (3.7a)}$$

$$X_t = a_0 + a_1 X_{t-1} + \ldots + a_i X_{t-i} + \beta_1 Y_{t-1} + \ldots \beta_i Y_{t-i} + \mu \text{..... (3. 7b)}$$

We will get the null hypothesis X is does not Granger-cause Y and the null hypothesis Y does not Granger-cause X, If we will fail to reject the null hypothesis X changes caused by Y.

2.3.6. Diagnostic Tests

A diagnostic test such as Heteroscedasticity Test: will be conducted to the model's quality of the major problem any regression underestimates for the standard error and variance (Long and Laurie, 1998). Besides normality test it helps the confidence intervals become valid based on large sample residual tests (Gujarati & Porter, 2009). Moreover autocorrelation is refers to the correlation degree, it examines the link between past and current values applied in this model.

2.3.7 Structural VAR identification

The Structural VAR investigation is to check the macroeconomic policy instruments or virables & industrial sectors output determinants of economic growth in Ethiopia, we will employ SVAR models proposed by the so-called AB-model of Amisano and Giannini (1997). For this research purposes assume that $\sum = E[e_t\ e_t]$ is the residual covariance matrix defined as follow.

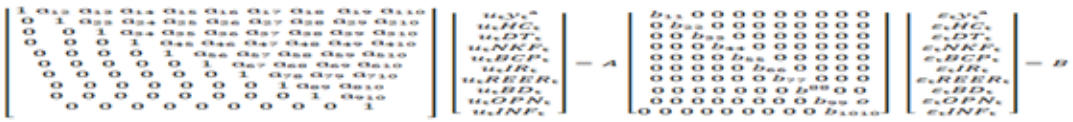
$Ae_t = Bu_t$……..3.8a

where e_t is the reduced form disturbance vector, while u_t represents the unobserved structural innovation vector, both with a length k. The SVAR analysis requires some restrictions for A & B matrices with a dimension kxk the structural innovations covariance matrix $E[u_t\ u_t]=I$ where I represent the identity

matrix so that u_t imposes the following restrictions on A and B:

$A\sum A = BB$……3.8b

We will specify that for the identification of the AB model at least $K^2+K(K-1)/2=K(3K-1)/2$ restrictions are needed. A certain assumptions are required for identification the structural shocks cannot be observed directly without restrictions. Then, we will apply the structural restrictions to identify determinants of INDP (Y_t^a). Here, industrial sectors output (Y_t^a) has been assumed responsive only to own shocks leading it to be the most exogenous variable in the system. We need to INDP (Y^a_t) is responsive to the next macroeconomic policy instruments or virables.

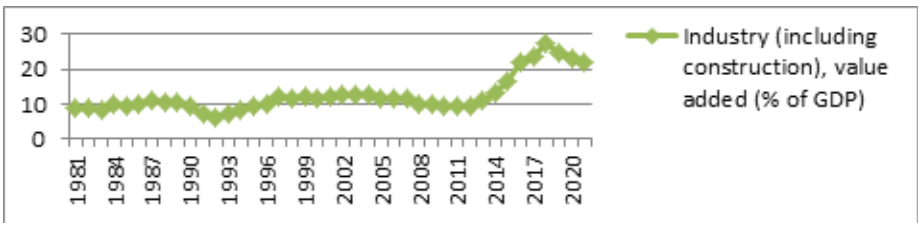


We will identify the industrial output growth model with 10 degrees of freedom SVAR system structural parameters is estimated by means of maximum likelihood estimator.

3. Empirical result and discussion

3.1 Descrpactive statics

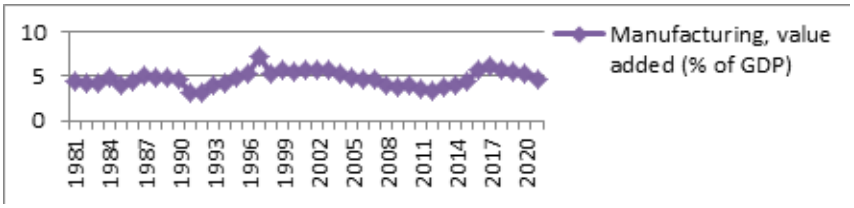
Before the next research brief clarification we can analysis the GDP contribution of industrial sectors output growth in Ethiopia including construction sectors of the economy. It covers large, medium and small scale industry,. Hence, the share of industry sector output in the Ethiopian has raised for 8.74% of national GDP in 1981 to 21.85% over the period of 2021 (see Fig, 1).



Source; authors computation

Figure 1: The Percentage Share of Industry Sector from the Country's GDP

Besides, the share of manufacturing industry for Ethiopian has a tiniest stage; it was covered in 4.395% of national GDP in 1981 rise to 7.3% and 6.2% of national GDP for 1997 and 2017 separately. Still manufacturing share for GDP is declined in 2021 of 4.6% of GDP (see Fig, 2).



Source; authors computation

Figure 2: The Percentage Share of Manufacturing Output from the Country's GDP

3.2 Unit root test

Before Johanson co integration test of the industrial sectors output growth model determine either stationary or non-stationary by Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test. The data were transformed to natural logarithms account for the expected nonlinearity's in the relationships and also to achieve stationarity in variance (Chang and Caudill, 2005). All the variables were tested and also DT; Ms; NKF; BD and OPN are stationery at 1% &5% level. The result of stationarity test indicated the rejection of the null hypothesis of non stationarity at 1%, 5% and also 10% significance level of all the series variables at the difference. Both ADF and PP unit root tests indicate that the growth series are stationary. Since the variables industrial sectors output growth model can applied to conduct the Johnson cointegration test, VECM and Granger causality test (see Table 1&2).

Table 1 INDP Model Augmented Dickey Fuller (ADF) unit root test result at difference

ADF											
	Without constant &trend				With constant				With trend			
Virable	Difference I (1) statistics	Critical value 1%	Critical value 5%	Decision	Difference I (1) statistics	Critical value 1%	Critical value 5%	Decision	difference I (1) statistics	Critical value 1%	Critical value 5%	Decision
DP	-3.307	-3.655	-2.961	reject H.	-2.468	-2.638	-1.950	reject H.	-4.208	-4.251	-3.544	reject H.
HC	-0.688	-3.655	-2.961	accept H.	-0.074	-2.638	-1.950	accept H.	-1.279	-4.251	-3.544	accept H.
DT	-2.941	-3.655	-2.961	accept H.	-2.622	-2.638	-1.950	reject H.	-2.906	-4.251	-3.544	accept H.
Ms	-5.777	-3.655	-2.961	reject H.	-5.806	-2.638	-1.950	reject H.	-5.706	-4.251	-3.544	reject H.
NKF	-6.006	-3.655	-2.961	reject H.	-5.461	-2.638	-1.950	reject H.	-6.285	-4.251	-3.544	reject H.
IR	-10.330	-3.655	-2.961	reject H.	-10.479	-2.638	-1.950	reject H.	-10.464	-4.251	-3.544	reject H.
REER	-3.499	-3.655	-2.961	reject H.	-2.573	-2.638	-1.950	reject H.	-3.566	-4.251	-3.544	reject H.
BD	-4.914	-3.655	-2.961	reject H.	-4.978	-2.638	-1.950	reject H.	-4.851	-4.251	-3.544	reject H.
OPN	-7.622	-3.655	-2.961	reject H.	-7.723	-2.638	-1.950	reject H.	-7.620	-4.251	-3.544	reject H.
GDP_n	-4.806	-3.655	-2.961	reject H.	-2.922	-2.638	-1.950	reject H.	-5.500	-4.251	-3.544	reject H.

Table 2 INDP Model Phillips-Perron (PP) unit root test result at difference

	PP										
	Without constant & trend				With constant				With tread		
ible	Difference I (1) statistics	Critical value 1%	5%	Decision	Difference I (1) statistics	Critical value 1%	5%	Decision	difference I (1) statistics	Critical value 1%	5%	Decision
	-3.307	-3.655	-2.961	reject H,	-2.468	-2.638	-1.950	reject H,	-4.208	-4.251	-3.544	reject H,
	-0.688	-3.655	-2.961	accept H,	-0.074	-2.638	-1.950	accept H,	-1.279	-4.251	-3.544	accept H,
	-2.941	-3.655	-2.961	accept H,	-2.622	-2.638	-1.950	reject H,	-2.906	-4.251	-3.544	accept H,
	-5.777	-3.655	-2.961	reject H,	-5.806	-2.638	-1.950	reject H,	-5.706	-4.251	-3.544	reject H,
F	-6.006	-3.655	-2.961	reject H,	-5.461	-2.638	-1.950	reject H,	-6.285	-4.251	-3.544	reject H,
	-10.330	-3.655	-2.961	reject H,	-10.479	-2.638	-1.950	reject H,	-10.464	-4.251	-3.544	reject H,
ER	-3.499	-3.655	-2.961	reject H,	-2.573	-2.638	-1.950	reject H,	-3.566	-4.251	-3.544	reject H,
	-4.914	-3.655	-2.961	reject H,	-4.978	-2.638	-1.950	reject H,	-4.851	-4.251	-3.544	reject H,
N	-7.622	-3.655	-2.961	reject H,	-7.723	-2.638	-1.950	reject H,	-7.620	-4.251	-3.544	reject H,
P_n	-4.806	-3.655	-2.961	reject H,	-2.922	-2.638	-1.950	reject H,	-5.500	-4.251	-3.544	reject H,

Source; authors computation

3.3 Testing for INDP Model Endogens Structural Breaks

The ZA and Perron allow structural breaks. Then, Table 3 empirical result display null hypothesis is rejected no break by CUSUM and single structure break. But there is a significant breakpoint occurred in the potential macroeconomic policy virables during the study period.

Table 3: Structural Break Test

Virable	CUSUM Structural break unit root test OLS residuals				CUSUM Structural break unit root test recursive				Single estimators structural break unit root test		
	T-Statistic	Critical value 1%	5%	10%	T-Statistic	Critical value 1%	5%	10%	F-Statistic	Break point	P-value
Lindp	2.6590	1.6276	1.3681	1.224	1.8747	1.1430	0.9479	0.850	157.4648	2011	0.0000
Lhcyp	2.5063	1.6276	1.3681	1.224	0.8542	1.1430	0.9479	0.850	162.8779	2013	0.0000
Ldt	3.0169	1.6276	1.3681	1.224	2.5651	1.1430	0.9479	0.850	397.7147	2002	0.0000
Lms	2.5689	1.6276	1.3681	1.224	2.2354	1.1430	0.9479	0.850	91.8904	1994	0.0000
Lnlcf	2.9075	1.6276	1.3681	1.224	3.3331	1.1430	0.9479	0.850	220.8456	2000	0.0000
Lir	1.4492	1.6276	1.3681	1.224	1.5696	1.1430	0.9479	0.850	12.7002	1993	0.0127
Lreer	2.6149	1.6276	1.3681	1.224	3.0897	1.1430	0.9479	0.850	100.9030	1994	0.0000
Lbd	2.5340	1.6276	1.3681	1.224	0.9583	1.1430	0.9479	0.850	80.8572	2006	0.0000
Lopn	2.7099	1.6276	1.3681	1.224	2.5903	1.1430	0.9479	0.850	163.7254	2008	0.0000
lgdp_n	2.7079	1.6276	1.3681	1.224	2.6056	1.1430	0.9479	0.850	159.4184	2008	0.0000

Source; authors calculation

3.4 Determining VAR length selection criteria

The study of INDP model lag length selection criteria has determined before conducting the Cointegration test. Then, before applying this test, it is necessary to determine the proper lag length by the LR, FPE, AIC, HQIC and SIC., VAR is used to determine the optimal lag length based on AIC our INDP model were explained by two lags to use our next task (see Table 4).

Table 4: Industrial Sectors Output growth /INDP/ VAR Model Selection-Order Criteria

Sample: 1983-2021					Number of obs=39			
lag	LL	LR	Df	P	FPE	AIC	HQIC	SBIC
0	-1718.75				1.5e+26	88.6538	88.8069	89.0804
1	-1261.62	914.26	100	0.000	2.0e+18	70.3396	72.0231	75.0317*
2	-1113.78	295.69*	100	0.000	5.1e+17*	67.8859*	71.0998*	76.8435
Endogenous: lindp lhc ldt lms lnlcf lir lreer lbd lopn lgdp_n								

3.5. Johnson co integration test

From Table 5 result Johansen (1988) cointegration test for the trace statistics evidence that the null hypothesis of at most 0, at most 1, at most 2..., and at most seven co-integrating vectors are rejected against the alternative hypothesis trace statistics r=7 of 24.6983 exceeds its critical value of 24.31; However the trace statistics at r=8 of 11.5977 is less than the critical value of 12.53; we cannot reject the null hypothesis, there is an individual cointegration linking between dependent and independent virables. Moreover, as we discussed, another alternative of the rank r+4 of 29.7712 is less than its critical value of 36.36 cointegrating equations, which maximum eigenvalue test statistics confirm cointegration bond among dependent and independent virables.

Table 5: Johansen Tests for Cointegration in Trend: None

Trend: none Number of obs = 39				Sample: 1983-2021 Maximum Lags = 2			
Max rank	parms	LL	eigenvalue	Trace statistic		Maximum eigenvalue	
				T-statistic	5% critical value	T-statistic	5% critical value
0	100	-1336.2714		385.3868	212.67	91.6598	59.06
1	119	-1290.4414	0.90465	293.7270	175.77	80.0505	53.69
2	136	-1250.4162	0.87160	213.6765	141.20	65.0561	47.99
3	151	-1217.8881	0.81140	148.6204	109.99	51.8120	41.51
4	164	-1191.9822	0.73513	96.8084	82.49	29.7712	36.36
5	175	-1177.0965	0.53390	67.0372	59.46	24.5093	30.04
6	184	-1164.8419	0.46658	42.5279	39.89	17.8296	23.80
7	191	-1155.9271	0.36693	24.6983	24.31	13.1006	17.89
8	196	-1149.3768	0.28531	11.5977*	12.53	10.9528	11.44
9	199	-1143.9004	0.24485	0.6448	3.84	0.6448	3.84
10	200	-1143.578	0.01640				

Source; authors calculation

Besides from the Table 6 result co integration test for the trace statistics evidence that the null hypothesis of at most 0, at most 1, at most 2…, and at most five co-integrating are rejected against the alternative hypothesis of r=5 of 68.8903 exceeds its critical value of 68.52; However the trace statistics at r=6 of 41.9794 is less than the critical value of 47.21; we cannot reject the null hypothesis that there is an unique co integration link among INDP and macroeconomic policy variables. Also, as we discussed, another alternative to the determination of r+5 co integrating equations 29.9109 less than 33.46 critical value, which maximum eigenvalue test statistics confirm co integration link among macroeconomic policy virables on INDP in Ethiopia.

Table 6: Johansen Tests for Co integration in Trend: Constant

Trend: constant Number of obs =39				Sample: 1983-2021 Maximum Lags =2			
Max rank	parms	LL	eigenvalue	Trace statistic		Maximum eigenvalue	
				T-statistics	5%critical value	T- statistics	5%critical value
0	110	-1315.2328		402.9155	233.13	94.6141	62.81
1	129	-1267.9257	0.91161	308.3014	192.89	76.9132	57.12
2	146	-1229.4691	0.86084	231.3882	156.00	64.8879	51.42
3	161	-1197.0252	0.81058	166.5003	124.24	53.1555	45.28
4	174	-1170.4474	0.74410	113.3448	94.15	44.4545	39.37
5	185	-1148.2201	0.65014	68.8903	68.52	26.9109	33.46
6	194	-1134.7647	0.49843	41.9794*	47.21	18.4705	27.07
7	201	-1125.5195	0.37724	23.5090	29.68	12.5461	20.97
8	206	-1119.2564	0.27508	10.9629	15.41	10.9606	14.07
9	209	-1113.7761	0.24500	0.0022	3.76	0.0022	3.76
10	210	-1113.775	0.00006				

Source; authors calculation

Finally the cointegration test result for the trace statistics evidence of the null hypothesis at most 0, at most 1, at most 2…, and at most five co-integrating vectors are rejected against the alternative hypothesis at r=5 of 82.0186 exceeds its critical value of 77.74. However the trace statistics at r=6 of 49.8418 is less than the critical value of 54.64; we cannot reject the null hypothesis that there is an individual cointegration link between INDP and listed macroeconomic policy virables. Moreover, as we discussed, another alternative of the determination r+5 cointegrating equations 32.1767 less than its critical value of 36.41, which is the maximum eigenvalue test statistics confirm at least five, unique cointegration long run link among them.

3.6 Vector error correction model

After finding the presence of Johnson cointegration, VECM has built into long-range behavior of endogenous growth allowing to short-run adjustment. According to none constant & trend VECM result shows, the ECM_{t-1} coefficient is negative sign and statistically insignificant at 5% level. However in the short run human capital is adversely affect to industrial sectors output growth. On the other adjacent openness to trade is a strong positive link to industrial output growth in Ethiopia. However the rest virables are weak.

For the ECM_{t-1} coefficients of macroeconomic policy instrument to industrial sectors output growth is weaker at 5% level and. Moreover the short run trend (constant) VECM result show that the coefficient of openness to trade has positive significant link to INDP in Ethiopia. But human capital is strongly adverse effect to INDP in Ethiopia. The rest virable are weak.

Based on the results of VECM from Table 7 error correction to industrial sectors output growth is weaker at 5% level. The trend speed adjustment of any virable toward long run equilibrium is that about 3.77513 percent of equilibrium is adjusted each year. Finally the trend (trend) vectors error correction

model (VECM) results confirm still human capital, are significant negative bond to industrial sectors output growth. However the coefficient of trade openness is positive linkage to industrial sectors output growth, the rest virables are weaker.

Table 7 INDP Model Vector Error Correction Method

Dependent Variable: lindp				
Independent Variable	trend(trend)			
	Coefficient	Std. Error	t-Statistic	p-value
ECM(-1)	.0377513	.1965232	0.19	0.848
D. lindp	-.0228275	.1498792	-0.15	0.879
D. lbc	-7.154133	1.866783	-3.83	0.000*
D. ldt	.0454588	.1244601	0.37	0.715
D. lms	.010548	.0205451	0.51	0.608
D. lnlcf	.1823575	.1287807	1.42	0.157
D. lir	-.0287535	.0322029	-0.89	0.372
D. lreer	.1228801	.1106678	1.11	0.267
D. lbd	-.0020295	.0449427	-0.05	0.964
D. lopn	.2041759	.0691286	2.95	0.003*
D. lgdp_n	.0474461	.1822482	0.26	0.795
ξ_0	.0389747	.0716045	0.54	0.586
	R-squared= 0.8965		AIC= 77.90198	
Sample: 1983 – 2021	chi-squared= 216.6517		HQIC= 80.41191	
Number of obs=39	P-value= 0.0000		SBIC= 84.89747	

Source; authors computation

The implication of this result is that to suggest the target of macroeconomic policy virables and public investment on industrial sectors output growth have been insignificant impact to Ethiopian economic performance of industrial sectors beyond human capital and trade openness. However the link between trade openness and economic growth has received a great deal of attention both in the theoretical and empirical literature during the study period. Thus, there is no consensus whether greater openness to trade stimulates economic growth; trade openness is positive affect to industrial sectors output growth in Ethiopia at the short term. As a result, productivity and technology change of in this sector will go up and this will boost the industrial sectors growth. Further extended by the researchers believe that trade liberalization encourages specialization on industrial sectors which have contribute to improve technology in the short-run.

However human capital is adversely affect to the industrial sectors output growth. In this context, human capital is regarded as a measure the ability and skills of labour and it is evaluated by the formal education or the job learning accumulated experience. While, better-educated and well-trained workforce can be expected to exert a positive effect to economic growth, as human capital on industrial sectors output growth being negative statistically weighty in Ethiopia. The explanation for such an unexpected result can be the use of poor quality education & inadequate labour force to capture qualitative rather than quantitative aspects of human capital.

Then we investigate the statistical significance of each variable in the cointegrating vector by imposing general restriction of permanent and temporary shocks from Table 11 none trend constant VECM coefficients showed that net capital formation, interest rate, and real effective exchange rate are positive significant link to industrial sectors output. However the rest virables are adversely affected to industrial sectors output growth in the long run during the study period.

3.7 Granger casualty test

As we can see from Table 8 below, the null hypothesis industrial sectors output growth does not granger cause of money supply to private sectors credit, low interest rate, budject insufficiency and GDP_n is rejected at 5% level. Besides the estimation result exists bidirectional causality result rejected at 5% level of null hypothesis is that digitalization, net capital formation and GDPn does not granger casualty to industrial sectors output growth in Ethiopia.

Table 8: Industrial Output Growth Model Granger Causality Test

Null hypothesis	chi2	Df	P-value	Null hypothesis	chi2	df	P-value
lndp does not granger cause lhc	57.949	2	0.000*	lhc does not granger cause lndp	6.6466	2	0.036**
lndp does not granger cause ldt	19.001	2	0.000*	ldt does not granger cause lndp	3.8344	2	0.147
lndp does not granger cause lms	4.3922	2	0.111	lms does not granger cause lndp	19.284	2	0.000*
lndp does not granger cause lnkf	22.395	2	0.000*	lnkf does not granger cause lndp	2.981	2	0.225
lndp does not granger cause lir	5.4344	2	0.066***	lir does not granger cause lndp	8.6955	2	0.013**
lndp does not granger cause lreer	16.962	2	0.000*	lreer does not granger cause lndp	33.719	2	0.000*
lndp does not granger cause lbd	4.8155	2	0.090***	lbd does not granger cause lndp	8.3161	2	0.016**
lndp does not granger cause lopn	44.696	2	0.000*	lopn does not granger cause lndp	6.6547	2	0.036**
lndp does not granger cause lgdp_n	5.277	2	0.071***	lgdp_n does not granger cause lndp	1.2417	2	0.537

4. Conclusion and policy implication

The industrial sector of Ethiopia is characterized by dominance of small & medium enterprise with slow-moving output growth process. For, this paper examines the link between industrial sectors output and macroeconomic policy virables in Ethiopia during the period. We can use multivariate time series VAR and SVAR econometric technique. As per the empirical analysis for the short-run macroeconomic policy virables and industrial output growth is weak beyond human capital and openness to trade. Still the coefficient of openness to trade has positive significant link to industrial sectors output growth, however human capital is strongly adverse effect to industrial sectors output growth. In the long run, net capital formation and interest rate have positive significant bond to industrial sectors output growth in Ethiopia, the rest virables are weak for the periodic effect and trendy shocks. Moreover, the granger causality test is employed to find, using direction, uni-directional and bidirectional causality the granger causality all of the macroeconomic policy virables successively to industrial sector output growth.

From the SVAR in line with our research estimation results show that positive shocks on human capital, money supply of foreign currency reserve, and net capital formation will lead to decrease industrial

sectors output growth for Ethiopia in the short run. However the other adjacent inflation with GDP_n, will lead to increase the industrial sector output growth. But the rest virables are weak. For the long run Ethiopia industrial sectors output growth, which the macroeconomic policy have the efficiency of industrial sector output growth is confidently determined by finical development indicator like both foreign currency reserve and domestic saving money supply. However the rest virables are weaker to industrial sectors output growth.

For Ethiopia feature in the long term money supply of foreign currency reserve and domestic saving finical development indicator to private sectors is necessary to support improving industrial sectors output growth. Because up grading of finical development indicator in the long run is necessary to supply of knowledgeable human capital, technology innovation and access of infrastructure and stabile business environment to industrial sectors output growth.

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Effect of Product Portfolio Management on Firm's Performance: Evidence from Systematic Review

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Abstract

Portfolio product management (PPM) involves analysing, measuring, and optimizing a company's product portfolio to achieve business goals, identify expansion opportunities, and create a roadmap. The main goal of this study was to assess the effect of product portfolio management on firm's performance. This study employed a systematic review methodology, with 49 from 2010 to 2023 existing articles completed on product portfolio management and firm's performance based on an inclusion/exclusion criterion. The data was collected using a systematic strategy and analyzed using content analysis from various sources such as Emerald, Google Scholar, Research Gate, Wiley online library, Tyler, and Francis. The findings of this study were collected using a thematic method, which involved extracting previous researchers' findings from the literature, classifying similar themes and findings, and drawing conclusions. The findings of this review, product portfolio management is crucial for maximizing return, gaining a competitive advantage, and efficiently allocating resources. Effective portfolio management is essential for performance optimization and risk analysis in the insurance and banking sectors. Strategic methods and portfolio maps positively influence portfolio performance. The review recommends that organizations should prioritize portfolio management practices to maximize profitability, balance business strategy, and support business strategy.

Keywords: Product Portfolio Management, Organizational Performance

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1. Introduction

Green Portfolio product management is the process of managing a company's product portfolio. This comprises measuring analyzing, and optimizing how existing products contribute to broader business goals. It also involves identifying opportunities to expand the portfolio and creating a product portfolio roadmap. Portfolio management was an essential means to accommodate this paradox(Nyasetia et al., 2023). Portfolio management, product development, and over-commitment, presenting a reference model and mindset, besides supporting tools and tools for effective portfolio management (Behnam Khakbaz et al., 2020). Economics has a long history with product portfolio management. Harry Markowitz's finance theory is where it all started. A method for creating an ideal securities portfolio under uncertainty by Markowitz in 1952. The whole of an investor's financial assets is referred to as their portfolio in this context (Paletta, 2019). Very popular portfolio approaches in strategic management are the matrices of The Boston Consulting Group (also known as "BCG-matrix") or McKinsey (also known as "McKinsey Business Screen" or "McKinsey Matrix") or Cooper's New Product Development Management specializes in new product development (Markowitz, 1952). According to portfolio theory (PT), the pooling of imperfectly or negatively linked returns from individual items within the portfolio reduces the volatility of financial returns as noted in (Jacobs & Swink, 2011).

Portfolio management is recognized as aggregate attention, given that companies are introducing several projects simultaneously (Mohammed, 2021). Product management selects the markets, goods, and technologies that a company should invest in strategically (Otten et al., 2015). Structure a varied PP aids in reducing the risk associated with depending only on a small number of hallmark items and gives new businesses the ability to adapt more readily to technological change and environmental (Adeniran et al., 2010; Olagbenga & Ogunsakin, 2020; Villamil & Hallstedt, 2018)

Product portfolio management (PPM) gives organizations the ability to obtain the utmost value from their product portfolios by applying portfolio management principles to the product development process (Planview, 2012). As stated by Doorasamy, (2015) during the process of producing new products (NPD), businesses should concentrate on the value that is being created for their organization. Many researchers emphasized the importance of studying product portfolio management in strategic decision-making (Jugend & Da Silva, 2014; Mantha, 2015; Udo-Imeh et al., 2012). Resource allocation (Behnam Khakbaz et al., 2020; Cooper & Edgett, 2001). Risk management (Olagbenga & Ogunsakin, 2020; Villamil & Hallstedt, 2018). Innovation and growth (Rubera et al., 2016) and competitive advantages (Bayus & Putsis, 2005; Behnam Khakbaz et al., 2020; Reguia, 2014).

Empirical data from the past demonstrates that novel product portfolio management initiatives, like the launch of new products, investments in R&D, and entry into new markets, typically have a beneficial

impact on business success (Behnam Khakbaz et al., 2020; Doorasamy, 2015b; Tolonen, Harkonen, et al., 2014). Over the past few decades, researchers have been carrying out many investigations to improve product portfolio performance. These studies recommend the adoption of specific management practices, such as financial and scoring tools for decision-making by multifunctional teams, and systematization and formalization of such teams' activities (Cooper et al., 2000; McNally et al., 2013; Udo-Imeh et al., 2012; Yang & Xu, 2017).

This study investigates the impact of product portfolio management on firm performance and decision-support effectiveness. It discusses its role at the organizational level, its impacts, and the methodological approaches used. The review also explores potential future research directions. Moreover, the following objective will be meeting.

Objective of study

The objective of the study is to assess the company's organizational performance through effective product portfolio management.

2. Literature Review

2.1 Product Portfolio Management

The methodical and strategic administration of a business's assortment of goods and services is known as product portfolio management (Otten et al., 2015). PPM is a thorough examination of how to divide up a certain resource over a specified period among various goods while taking the company's strategic goals into account (Behnam Khakbaz et al., 2020; Killen, 2012). PPM mainly focuses on evaluating aspects of strategic, technological, market and marketing, risk, and economic return issues (Jugend & Da Silva, 2014). PPM can be divided into two major categories: 1) Concepts with a portfolio-analysis focus (portfolio analysis tools) and 2) Concepts with a focus on the managerial process (Paletta, 2019). A variety of portfolio analysis models have been developed since the 1960s, some of which are well known and commonly referenced as standard (Wind, Mahajan & Swire, 1983). Portfolio models like BCG, General Electric/McKinsey, Shell, Arthur D. Little, and Abell and Hammond provide a managerial process for generating the optimal portfolio, highlighting the difference between a picture and a movie (Kotler & Armstrong, 2010).

PPM enables organizations to adjust product portfolio investments based on market trends, competitive threats, regulatory requirements, resource capacity, and pipeline priorities, thereby maximizing return on investment (Adeniran et al., 2010; Barroso et al., 2019; Behnam Khakbaz et al., 2020). PPM decisions are responsible not only for determining the designs for new products but also for revisions, updates,

and even decisions to discontinue products that are currently being produced and sold (Bukhari, 2017; Cooper, 1999). PPM helps business managers to consider the decision-making process related to the PPM aspect complex. Therefore, their decisions are associated with their political and corporate values (Kester, 2012). Most scholars agreed that PPM is a vigorous process that was involving to increase over time in product offerings to seal product space (Adeniran et al., 2010; Connor, 1998; Herzer et al., 2023; Moreno&Terwiesch, 2016)

PPM focus on product categories managing each product (Otten et al., 2015). Product life cycle (Tolonen et al., 2015; Tolonen, Kropsu-Vehkaperä, et al., 2014) Market share (Bayus & Putsis, 2005) Revenue and profitability (Opoku et al., 2014) and customer need and preference (Alberto et al., 2020). Successful portfolio management is essential for NPD. Making strategic decisions regarding the markets, goods, and technologies that our company will invest in is the essence of portfolio management (Bukhari, 2017; Cooper & Edgett, 2001). It is analyzing the worth of the right product portfolio and realizing the possible full potential that can be extracted by managing the product portfolio (McNally et al., 2013). A wise bank's portfolio management intentions are liquidness, protection, and income, which may require sacrificing other objectives. High profit may require safety and liquidity, while more safety and liquidity may require income (Kenyoru et al., 2016; Tolonen, Harkonen, et al., 2014).

2.2. Role of Product Portfolio Management

Portfolio management is a strategic approach that prioritizes effective resource allocation and financial competitive advantage (Cooper et al., 2000; Cooper & Edgett, 2001). The four core modules of PPM are project execution and management, pipeline resource and enablement, product value assessment and monitoring, and portfolio selection and optimization (Brown, 2010). Portfolio management's best practices are financial competitive advantage, and efficient distribution of organizational resources effectively (Alberto et al., 2020; Opoku et al., 2014; Rubera et al., 2016). The strategic work of portfolio management is arranging goods and services within an all-encompassing framework while weighing a company's technological capabilities against the demands of the market (Andersen, 2010; Ing, 2015).

The application of PPM in rapidly changing business environments is being questioned due to its unique practice and context (Abubakar et al., 2018). PPM is the organized and combined view of all products of a company to plan, prioritize, select, coordinate, and control them. Thus, PPM was established along the dimensions of strategy, organization, processes, and control to be successful (Amelingmeyer, 2009). PPM can be seen as a higher management-level decision-making process for managing uncertainty, active opportunities, planned goals, and interdependencies among portfolio items to obtain clear decisions based on agreed criteria(Cooper et al., 2001).

PPM maximizes each product's financial contribution to a firm's growth, recognizing that each product has varying financial impacts (Kotler & Armstrong, 2010). Product portfolio management is fundamental to the productivity of products (Kotler et al, 2006). According to Opoku et al., (2014), Few studies evaluate commercial banks' product portfolio performance, particularly in Ghana. Researchers have not assessed individual product portfolio items. Case companies often overlook portfolio balance, making it crucial to identify it as a target for optimal PPM practices (Bukhari, 2017). By integrating portfolio management concepts into the product development process, PPM enables businesses to get the maximum value from their product portfolios (Planview, 2012). The study evaluated the portfolio performance of four business types using six metrics, focusing on project allocation, timeline efficiency, high-value, profitable, balanced, long-term, high-risk, aligned, and spending breakdown (Cooper et al., 2000)

3. Research Methodology

A systematic review is research conducted using clear, consistent, and repeatable protocols to answer a specific question (Littell & Pillai, 2008). Systematic reviews collect all possible studies related to a given topic, and design, and review their result(Kang, 2015). This systematic review was a plan that the previous literature accurately and reliably analyzed the quality of peer-reviewed journals by preferred reporting items and consisting of a meta-analytical structure (PRISMA) (Liberati et al., 2009). PRISMA is a systematic review process that involves a four-stage flow diagram that outlines the sample identification, screening, eligibility testing, and inclusion of studies. It should clearly describe the process of report selection, including distinctive information, excluded records, potentially eligible reports, and reasons for exclusion (Bryła et al., 2022; Liberati et al., 2009). This review followed four steps, which include, establishing the inclusion/exclusion criteria for study selection, identifying relevant quality studies, evaluating the literature, and finally reporting the findings.

3.1. *Selection of articles from the database*: Databases like Scopus, Elsevier's Science Direct, Google Scholar, and Research Gate help determine article relevance. Journal ranking sites like Scimago and Google Scholar use variables like h index, impact factor, and dating trend to assess journal quality (Soledad et al, 2018). This review used many databases that published the related research in the English language from Emerald, Google Scholar, Research Gate, Wiley online library, Tyler and Francis, and Springer Link.

3.2. *Identification and Selection of Articles:* the review provides a comprehensive explanation and justification for the searching and managing steps, including the source of findings, search strategy, criteria, screening methods, inclusion decision, and statistical analysis methods (Piper, 2013). This review identifies and selects published articles related to product portfolio management (PPM) using

search databases like Research Gate, Web of Science, Scopus, and Google Scholar. It includes reviews, reports, and research in English, including non-relevant records.

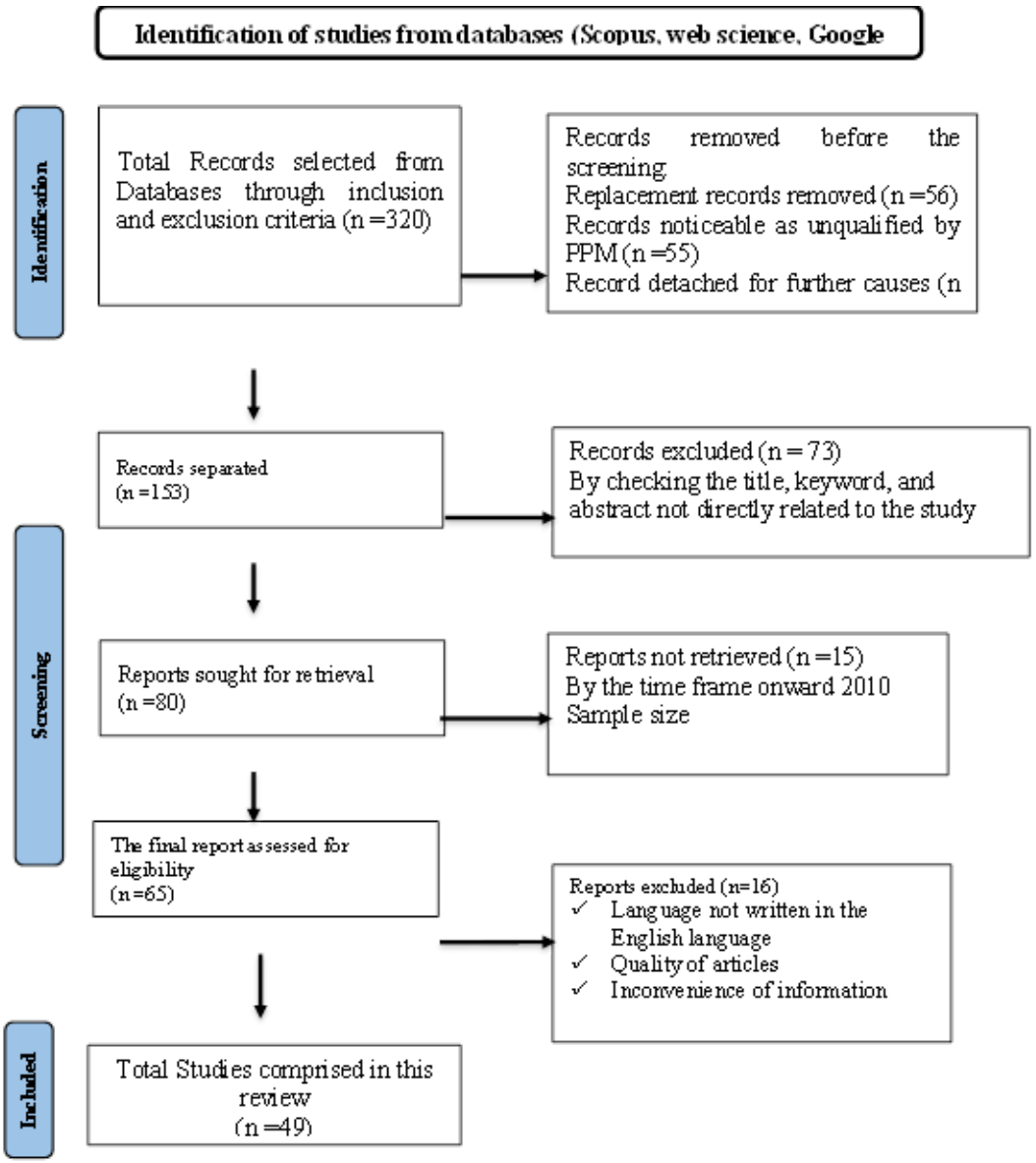

Figure 1: PRISMA–the diagram representing the summary of the selected article adopted from (Bryła et al., 2022)

4. Result

4.1. Publication distribution

This review included published articles on PPM and the firm's performance for the 2010–2023 periods.

The figure below shows the year-wise publication of reviewed articles

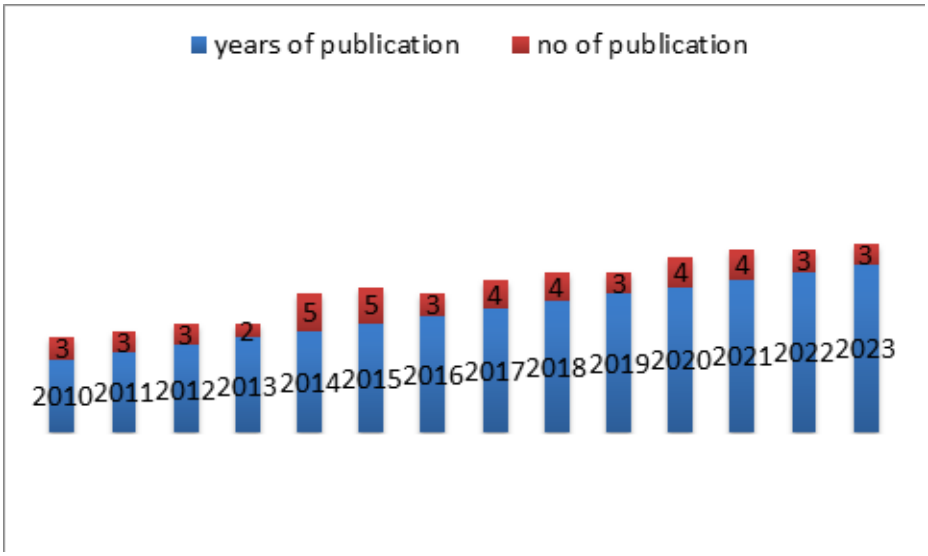

Figure 2 Documents of the year: source own elaboration

Figure 2 shows the year-wise distribution of published articles. It shows that articles published on the effect of product portfolio management on firms' performance increased, especially in 2014 and 2015. In general, the publication's selected title is a sharp rise from 2010–2023.

4.2. Research Approach Used

The research approach includes mixed, quantitative, and qualitative methodologies. The figure below shows the research approach used in selected articles.

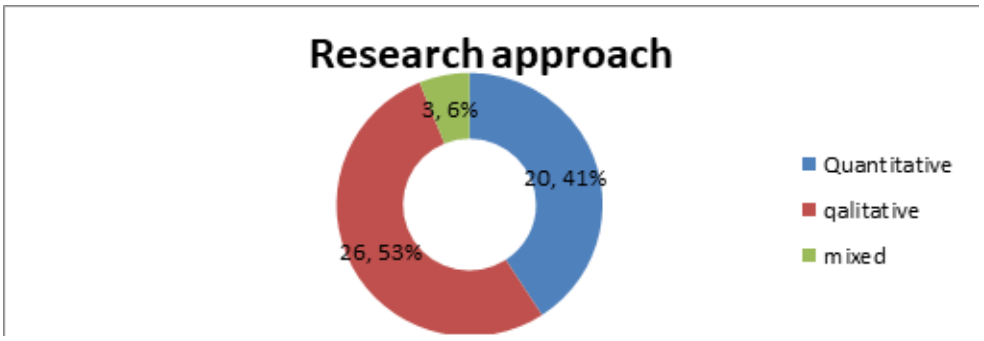

Figure 3: Methodologies used in selected studies

The above figure 3 shows that the majority (53%) of articles reviewed used a qualitative approach followed by a mixed research approach (41%) used a quantitative research approach and only (6%) of articles used a mixed research approach.

4.3 Data analysis adopted in selected articles

Data analysis primarily steps for big data analytical methodologies, methodical construction, data mining, and analysis tools(Abdul-Jabbar & K. Farhan, 2022). The distribution of data analysis methods utilized in a set of collected articles. The results show that the majority of the articles employed the case study, followed by structural equation and regression.

4.4 Geographical Distribution of Reviewed Articles

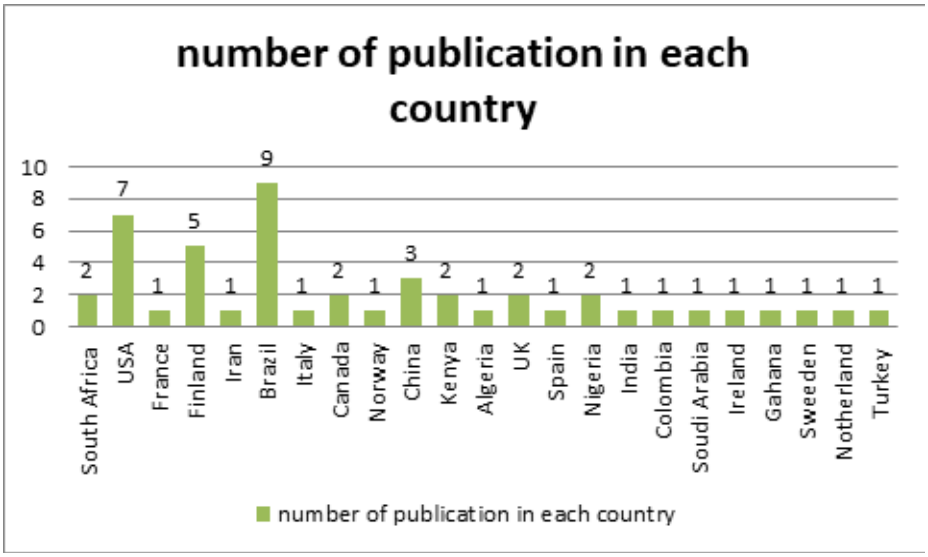

Figure 4: Country included in review article

The review article comprehensively explored studies from various countries to understand the PPM, encompassing studies from various regions and continents.

5. Discussion

Portfolio management techniques aim to optimize resource allocation, return, and competitive advantage. However, flaws in the organization's PPM process were indicated by the failure of NDP initiatives (Doorasamy, 2015a). PPM is a crucial tool for enhancing market competitiveness, but its limitations often prevent practical applications or require significant management intervention (Herzer et al., 2023). The delivery performance, time, cost, quality, and are all badly affected by product complexity, and the links between quality and distribution concert are not always evident (Trattner et al., 2019). PPM is crucial for successful NPD and business objectives, as it defines projects, revisions, updates, and decisions regarding product discontinuation (Jugend & Da Silva, 2014). A portfolio that is managed and controlled effectively will allow the portfolio-managing organization to utilize and optimize its

resources to support other strategic Projects, Programs, and Portfolios that are of significant value to the organization (Abubakar et al., 2018).

he study found that CCPM adoption significantly improved Product Performance Management (PPM) performance and may indirectly benefit the product development program (Luiz et al., 2019; Tolonen, Harkonen, et al., 2014). Digitalization and game-based techniques can work together to make sustainable design tools and methodologies easier to use, but careful testing is advised to avoid potential problems that could have the opposite impact (Villamil & Hallstedt, 2018). PPM strongly correlated with novel creation success rates, with strategic methods and portfolio maps having the strongest positive influence (Doorasamy, 2015b; Tolonen et al., 2015). The study makes known that the outcome of the alliance portfolios on a firm's future performance varies and depends on its strategic positioning, making effective portfolio management challenging (Martynov, 2017; Medini et al., 2020). Financial techniques serve as the primary mechanism for deciding on a PP; this not only illustrates the corporations' desire to maximize value but also confirms a global study on the topic (Jugend & Leoni, 2015). PPM-related targets and metrics can be categorized as strategic fit, value maximization, and the portfolio balance type of performance management areas (Adeniran et al., 2010).

Innovation literature suggests that non-promotional development (NPD) skills are crucial for businesses to efficiently utilize external ideas and technologies, demonstrating their exposure to various external resources (Barroso et al., 2019; Rubera et al., 2016). Portfolio management was gaining increasing attention from researchers and practitioners involved in innovation and product development (Jugend et al., 2016). Through the use of GPD practices, PPM generates good technological and market opportunities, changes dependent factors and control variables evaluated, and greatly influences the performance of product portfolios (Jugend et al., 2017). Portfolio of Products of the application of the indicators developed to select the product(s) to be obtained. PPM indicators can be applied, in many ways the economic potential indicator and, the energy indicator regarding the rupture of the raw material in smaller parts (Guerras et al., 2021). Portfolio management performance significantly contributes to NPD performance and firm profitability. Several studies have analyzed the influential factors of portfolio management performance based on empirical evidence, such as manager dispositions or management methods (Yang & Xu, 2017). PPM refuges fine the NPD phase of the product life cycle including related product portfolio management targets (Tolonen, Harkonen, et al., 2014).

Banks' financial results are influenced by product diversity, investment in technology equipment like ATMs, and the expansion of branches (Kenyoru et al., 2016). According to Ghorban & Hesaam, (2022), The product proliferation approach enhances consumer satisfaction by expanding the range of products offered, despite higher engineering expenses, to achieve commercial goals (Way et al.,

2018). Product propagation decisions have both demand and supply implications (Bayus & Putsis, 2010). The company's success is attributed to its ability to create competitive advantages in its products, thereby gaining customer loyalty and expanding its market share through innovation (Reguia, 2014). The impact of effective project portfolio management on reduced pricing, measuring the impact of effective project PPM on market share, and evaluating the impact of effective project PPM on enterprise capital growth (Okechukwu & Egbo, 2017). PPM allows for scenario comparison, prioritizes projects in strategic or financial categories, establishes organizational focus, and eliminates efforts on product/ project redundancies (Nyasetia et al., 2023). New product and product variation releases have occurred more quickly expanded and more sophisticated product offerings. More new goods are added to the catalog than old ones are eliminated (Tolonen et al., 2015).

Ensuring that key capabilities and competencies are in line with business strategy objectives, the PPM target setting should cover all phases of the product life cycle as well as the technical and commercial components of the product range (Mustonen et al., 2020). PPM is a strategy used by senior management to select new product development projects, aiming to maximize portfolio profitability, and balance, and support the corporate plan (Mantha, 2015). Product portfolio management as a concept and a tool for strategy implementation is not consistently implemented only a couple of strategic and tactical product portfolio management tools are utilized (Kropsu-Vehkaperä, et al., 2014). PPM aids sustainable innovation, but challenges in implementing strategies. Companies are considering incorporating sustainability dimensions into product portfolios for efficient communication and faster growth of viable explanations (Villamil & Hallstedt, 2018).

PPM was the strong suit of the product portfolio of the insurance companies (Ansari, 2012). Knowledge about the performance of each product by management of commercial banks is relevant to effective portfolio management (Opoku et al., 2014). NPPM decisions are an important research area because these decisions affect firm profitability but are difficult to make because of limited reliable information (McNally et al., 2013). The primary objective of the study was to examine the interaction between PPM and bank business success. Additionally, the study investigated the impact of loan risk monitoring, diversification, and analysis on bank performance (Olagbenga & Ogunsakin, 2020). Portfolio analysis is a tool that evaluates different companies' long-term potential and relative strengths and weaknesses. It helps strategic managers determine whether a portfolio is sufficient for long-term corporate growth and profitability (Udo-Imeh et al., 2012). Due to a lack of product portfolio management, or related ambiguities, some key product decisions are seen to be done only at the business line or product manager level, or even within customer account teams, without strategic analysis of product suitability to companies of product portfolio (Tolonen et al., 2015).

6. Conclusions

PPM is necessary to allocate resources effectively, maximize profit, and obtain a competitive edge. It facilitates project prioritization and decision-making. Product complexity has a detrimental effect on delivery performance, quality, cost, and time. A greater portfolio is the outcome of a broader product offering. However, consistent implementation is lacking, especially in the insurance and banking sectors for performance optimization and risk analysis. Strategic methods and portfolio maps have a strong positive influence on portfolio performance, while financial methods may not lead to higher-value projects in the portfolio. Effective PPM is essential for the success of NPD and alignment with business objectives. Portfolio management is in charge of ensuring balance, optimizing profitability, and bolstering the organization's overarching plan. The lack of PPM can lead to critical product decisions being made without strategic research, potentially compromising the acceptability of goods within the portfolio. PPM can contribute to sustainable innovation and the inclusion of sustainability dimensions in the product portfolio, aiding in communicating sustainability performance and accelerating the development of more sustainable solutions. PPM practices may have a stronger correlation with portfolio management performance than traditional methods, potentially indirectly contributing to product development programs.

NPD failures may indicate flaws in portfolio management. Financial methods and portfolio analysis are crucial for decision-making, influencing profitability. Limited reliable information can hinder these decisions, but they provide strategic insights.

5.1. Recommendations

Organizations should prioritize effective portfolio management practices to maximize profitability, and balance, and support the overall business strategy. This includes utilizing strategic and tactical tools to assess projects, comparing scenarios, and establishing clear target settings. Sustainability integration should be incorporated into the product portfolio to enhance long-term competitiveness and recognition. Collaboration and information sharing should be fostered within the organization, involving cross-functional teams and leveraging expertise from different departments. In industries like insurance and banking, effective portfolio management is critical for risk analysis and monitoring. Regular strategic portfolio analysis helps evaluate the portfolio's adequacy for long-term corporate growth and profitability.

5.2. Future Research Direction

Future researchers will explores portfolio management in agile and lean environments, emerging industries, digital transformation, global and multi-national contexts, and strategic alignment of PPM. It examines how portfolio management principles can be adapted to support iterative and adaptive product

development approaches, manage risk and balance portfolios, and integrate with strategic planning processes to align portfolio composition and resource allocation with organizational objectives.

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Brand Personality and Brand Preferences in the Smartphone Market

By

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Abstract

This study examined linkages between perceived brand personality and brand preference of smartphones among a cohort of young adults. The proposed research design was a quantitative in nature, which involved data collection via a cross-sectional survey among university students in Nigeria. A random sampling technique was employed in selecting 302 participants for the study. A structured questionnaire was used to obtain relevant data from the study participants. Results showed that Samsung, with a frequency percentage count of 37.1%, was the most preferred Android Phone brand among undergraduate students, while the least preferred Android Phone brand was Vivo with a frequency percentage count of 3.6%. The perceived brand personality ascribed to the mobile phone brands showed that in terms of honesty, competence, and sophistication, Huawei was evaluated favourably, indicating a well-rounded brand personality. Oppo was regarded as the most intriguing brand, presumably appealing to daring people. Xiaomi was connected with refinement, suggesting its attraction to people seeking fashionable and polished goods. Nokia excels at toughness, making it appealing to people who lead active lives. Regression results suggested that brand personality as a composite factor is a significant predictor of phone brand preference; as all the five brand personality traits jointly predicted ($F=3.378$; $p<.05$) and accounted for 5.8% of the variance in phone brand preference among the study participants. However, further analysis on the independent prediction of each brand personality trait on phone brand preference shows that traits of sophistication ($\beta=.231$; $p<.05$) and ruggedness ($\beta=-.312$; $p<.05$) were significant predictors of phone brand preference. The study provides valuable insights for both manufacturers and marketers to tailor their strategies and supply chain decisions to resonate with young consumers' perception of brand personalities.

Keywords: Brand personality, Brand preference, Smartphone, Student, Nigeria

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1. Background to the Study

The Nigerian economy has grown significantly, which has had a direct impact on the mobile phone industry. Nigeria now has over 170 million mobile phone connections; however, smartphones are utilized by just 15% of the population. Nonetheless, this figure is expected to increase by 60% by 2025, providing a positive outlook for smartphone makers (Statista, 2023). With so much rivalry in the smartphone industry, separating companies merely on price and quality has become difficult. As a result, smartphone makers have adopted brand personality as a strategic way to attracting customers and maintaining a competitive edge. As Keller (2008) explains, the term "brand" has its roots in Norwegian Old English, with "Brandr" meaning "to mark." Brand personality, which is an intangible but essential element of a company's identity, sets apart the products and services that a brand provides from its competitors. Thomas and Sekar (2008) posited that brand personality is a key element in achieving the goal of brand differentiation in a competitive market, and by linking brands to human personalities, brands can become more attractive to consumers, which can influence consumers' choice of a brand over its competitors. In the smartphone industry, Karjaluoto et al. (2005) emphasize the importance of conducting thorough research to identify the characteristics that will appeal to consumers. Saaksjarvi et al. (2016) notes that consumers tend to select brands that align with their self-image and lifestyle. Therefore, brands need to establish a compelling brand personality that connects with their target audience in today's competitive market of supply and demand.

According to Aaker et al. (2004), brand personality is a marketing technique that links a brand with human qualities, producing a distinct aura around the brand for customers. Jennifer Aaker (1997) created a five-dimensional brand personality scale: honesty, competence, sophistication, enthusiasm, and ruggedness. These brand personalities aid in the establishment of stronger connections between brands and their consumers, resulting in long-term interactions between companies and consumers and the strengthening of marketing activities (Jibril et al., 2019). Previously, businesses attempted to acquire customers by developing distinctive designs, features, and market positioning and then preserving client loyalty through time, as Kotler and Armstrong (2010) observed. However, today's consumers are interested in a product's psychological advantages as well as its functional usage, such as improving their self-concept, self-esteem, happiness, risk reduction, group acceptance, sense of belonging, and so on. All of these advantages, according to Ahmad and Thyagaraj (2015), are linked with the symbolic meanings of products. Researchers in recent times have recognized brand personality as an important factor in customers' decision-making processes when acquiring cellphones (Chen et al., 2023). Brands began to recognize that, in addition to technical qualities and pricing, customers desired a deeper relationship with their products.

Smartphone businesses in emerging markets have begun to grasp the importance of emotional marketing efforts in reinforcing brand personality. Heartfelt commercials, compelling narrative, and attractive images have all become essential components in communicating with customers (Chen et al., 2023). The Nigerian mobile phone sector has grown rapidly, with fierce rivalry among many firms seeking for market supremacy. Understanding the variables influencing brand preference among a target audience of phone users is critical for marketers trying to increase their market share and sustain long-term success. Despite the importance of brand personality in determining customer perceptions and preferences, there has been little study on the relationship between perceived brand personality and brand preference among students in this market. As a result, the problem that this research seeks to solve is a lack of empirical data and insights into how perceived brand personality traits influence mobile phone brand prefernce among a cohort tertiary students in Nigeria. The unique characteristics of tertiary students as being tech savvy and early adopters of technological devices (Umukoro & Okurame, 2017) make them an ideal cohort for studying brand personality and preferences for mobile phones in Nigeria, offering valuable insights into both current trends and future market developments. The specific objectives of this study included to (i) provide a ranked profile of preferred smartphone brands among the cohort (ii) examine exuded brand personalities of selected smartphones as perceived by the cohort (iii) understand the predictive role of brand personality attributes on consumers' brand preference

1.1 Brand Personality and Brand Preference

Sirgy's research conducted in 1982 sheds light on the pivotal role of brand personality in shaping consumers' preferences. The concept of brand personality, intricately woven with human-like emotions and characteristics, encompasses diverse facets of actual human personality (Kim et al., 2018). Biel (1993) echoes this sentiment, emphasizing that consumers are naturally drawn to brands that exhibit relatable personality traits, fostering emotional connections. In an acknowledgement of the inherent complexity of decision-making processes, it is widely acknowledged that individuals often rely on their instincts and past experiences, seeking to mitigate uncertainties and establish trust (Temporal, 2010). Consequently, the emotional bond formed between consumers and a brand yields a positive impact on their trust and loyalty towards the associated company (Solomon, 2009). Moreover, brand personality serves as a catalyst for inspiring and nurturing consumers' aspirations towards positive attributes (Aaker, 1996). A compelling example can be found in Nike's promotion of fitness and an active lifestyle, striking a chord with individuals who share parallel interests or yearn to embody the envisioned ideal image. By cultivating a well-defined array of brand personality traits, companies gain the ability to effectively convey their values to their intended audience. Consequently, the development of a distinctive and easily recognizable brand personality has evolved into a critical area of expertise for marketing practitioners (Yaverbaum, 2001).

Two divergent viewpoints emerge regarding the formation of preferences. One stance posits that consumers possess pre-existing and well-defined preferences, akin to the unearthing of hidden value in archaeology (Payne et al., 1999). In contrast, an alternative perspective argues that preferences are actively constructed by consumers during the evaluation process and are not predetermined (Payne et al., 1992). However, Simonson (2008) challenges the constructionist perspective by highlighting the oversight of determining factors and the pre-existing preferences that consumers bring to the decision-making context. This viewpoint emphasizes the significance of the judgment process while neglecting the existence of ingrained preferences held by consumers. Consumers possess a remarkable capacity to cultivate and uphold preferences for specific product attributes across diverse contexts, simultaneously acquiring specialized decision strategies tailored to each unique context (Amir & Levav, 2008; Hoeffler & Ariely, 1999). These strategies, intricately intertwined with contextual nuances, resist easy transferability. Thus, the formation of preferences emerges as a dynamic interplay between enduring and constructed elements (Bettman et al., 2008). The two perspectives on preference formation, far from being mutually exclusive, harmoniously coexist, mutually reinforcing one another's insights (Duarte & Raposo, 2010; Russell & Kamakura, 1997). The nature of consumer preferences exhibits a spectrum, with some firmly defined while others fluidly constructed, contingent upon contextual factors at play (Yoon & Simonson, 2008). While consumers typically maintain relatively stable preferences, anchored in their subjective evaluation of brand personality attributes, certain circumstances prompt reliance on context-specific strategies, bypassing subjective value assessment (Amir & Levav, 2008).

2. Theoretical Framework

The Self-Expression Theory provides an anchor for understanding the nexus between brand personality and preference. It is a widely acknowledged fact that individuals possess an innate desire to express their unique selves through various means at their disposal. Swann (1987) proposes that consumers harness the power of brands as a medium for self-expression, resulting in favorable attitudes towards their preferred brands. The act of brand selection serves as a conduit for communicating one's identity to others (Catalin & Andreea, 2014). This phenomenon stems from the tendency of individuals to extend their sense of self to their possessions and the objects they affiliate themselves with (Belk, 1989). Consequently, Keller (2008) accentuates the pivotal characteristic of brands in enabling consumers to effectively express their self-image. By cultivating a coherent set of personality traits, a brand imbues itself with a human-like essence, embodying the qualities it would possess if it were an actual individual (Kapferer, 1997). As consumers deliberate over brand choices, they do so with the aspiration of aligning themselves with the kind of individuals they admire, thereby transforming their brand selection into a profound act of self-expression (McEnally & Chernatony, 1999).

In today's consumer landscape, brands have taken on a new dimension, acting as powerful conduits for projecting personal values and shaping one's self-identity. Escalas and Bettman (2005) shed light on this phenomenon, emphasizing that brand-user associations play a crucial role in how individuals express themselves and communicate their identities to others. Through the possession of branded products, consumers effectively convey the perceived values and emotions associated with those brands. For instance, someone using a Polaroid camera might exude an aura of youthfulness, a carefree nature, and a keen eye for aesthetics, while a Sony camera user may be perceived as professional and attentive. As Fournier (1998) points out, brand preference is profoundly influenced by sociological factors, as the desire for self-expression arises from the intricate dance of social interactions. When individuals find themselves immersed in larger social groups, they often seize the opportunity to emphasize their individuality by making distinct choices that contribute to their unique identity within that specific context, as suggested by Kim and Aimee (2003).

The modern consumer landscape offers a fascinating avenue for individuals to project their ideal self-image and lifestyle through the choices they make in brands. Catalin and Andreea (2014) propose that brand choices go beyond mere self-expression and extend into the realm of cultivating an aspirational identity. This becomes particularly evident in the realm of luxury products, where consumers carefully curate their selections to align not only with their self-image but also to make a distinct social statement. The purchase of luxury brands serves as a prime example of this phenomenon, as individuals seek products that not only reflect their desired image but also carry a symbolic weight within their social circles. In this context, brand choice assumes a central role in the development and portrayal of one's social identity, contributing to the intricate tapestry of consumer behavior and self-expression (Catalin & Andreea, 2014).

3. Review of Empirical Studies

Ogbuji et al. (2011) conducted a study on the influence of branding on consumer choice of bottled water. The research found that packaging, bottling company, and branding significantly influenced consumers' choices more than the brand name and mark. The study recommended that in the future, more emphasis should be placed on the packaging of bottled water and the company name, supported by brand mark and name, to establish an effective branding strategy to compete with other firms. Despite the insightful findings of Ogbuji et al. (2011) on the influence of branding on consumer choice of bottled water, a notable research gap remains in understanding the specific elements of packaging, bottling company, and branding that exert the greatest impact on consumer decision-making. While the study acknowledges the significance of these factors, it does not delve into the specific brand personality attributes within packaging, company name, brand mark, and brand name that contribute to their influence on consumer

choices. Addressing this gap would provide a more comprehensive understanding of the key design elements, messaging strategies, and branding techniques that can be employed to effectively compete with other firms in the bottled water industry

Similarly, in 2012, Mokhlis et al. investigated the significance of consumer choice criteria in the selection of mobile phones among Malaysian customers. The study utilized a quantitative approach, collecting data from 376 university students. SPSS was used to analyze the data, incorporating descriptive statistics, factor analysis, and Friedman test across seven variables: price, image, durability and portability, recommendations, influence from media, and postsale service. The study's outcomes indicated that recommendations, features, and price were the most crucial factors that influenced consumers' decision-making process when choosing a mobile phone. While the study acknowledges the importance of image as a factor that may affect consumer choice, the researchers did not explore specific attributes or characteristics of image from a brand personality perspective as being influential in shaping consumers' choices. Exploring the underlying personality components of brand image may have provided a more comprehensive understanding of how personality elements of brand image impact consumer decision-making in the context of mobile phone selection.

In 2016, Khan investigated the factors influencing consumers' choice of smartphones. The study focused on brand image and brand features, aiming to identify the crucial attributes that influence consumers when choosing a smartphone. A structured questionnaire was distributed to 300 respondents in Karachi for data collection. The results indicated that consumers tend to prioritize smartphones with a positive brand image over features. According to the study, smartphone users perceive their devices as status symbols and tools for enhancing their self-image among peers. Similar to Mokhlis et al.'s (2012) study, Khan evaluated brand image as positive or negative without considering its personality elements. Being that smartphone users were found to attach some status symbol to their devices, the role of brand personality of these phones would have provided more insight into user perception of desired traits in the devices. The current study aims to consider this perspective.

In similar fashion, Solo-Anaeto and Ajilore (2016) studied the significance of smartphone brand personality among undergraduates at Babcock University. The study utilized a structured questionnaire and was administered to 200 undergraduate students. Aaker's brand personality model was used to describe various smartphone brands, including Samsung, Huawei, Gionee, iPhone, Lenovo, Nokia Lumia, LG, Blackberry, Itel, HTC, Tecno, Infinix, Sony, and others. After analysis, Samsung, iPhone, and Blackberry were found to be the top brands based on their perceived brand personality dimensions. Samsung was associated with the dimensions of ruggedness, sophistication, and excitement, while Apple was perceived to have a competent, sophisticated, and exciting brand personality. Blackberry,

on the other hand, was perceived to have competent and rugged brand personalities. While this study closely aligns with the current study due to the evaluation of the brand personality of mobile phones, the study employed a more descriptive approach in portraying brand personalities of the devices without acknowledging the predictive roles they play in consumer preference and choice.

Bairrada et al. (2019) conducted a study to investigate the impact of brand personality on consumer behaviour, with a focus on brand love. The study collected data from 478 Portuguese clothing brand consumers using an online survey and analyzed the data using structural equation modelling. The results revealed that there is a positive relationship between brand personality, brand love, and self-disclosure, while also providing resistance to negative information. Furthermore, brand love has a positive influence on brand loyalty, word-of-mouth marketing, willingness to pay more, consumer engagement, and other related outcomes. Bairrada et al.'s (2019) study is also closely in line with the current study; however the authors used brand personality as a measure of brand love, without considering if brand love predicted consumer choice for such clothes when making a purchase. Moreover, some brand personality attributes such as 'competence' did not be easily associated as a trait exuded by clothes as brand personality due to usage activities for clothes. The use of mobile devices as proposed in the current study would cater for this perceived ambiguity.

In 2021, Ojiula and Nnabuko studied the impact of brand innovativeness on the selection of decorative paint in the southeastern region of Nigeria. The study distributed 384 questionnaires to a population derived from contractors and painters in major commercial cities of three selected states out of the five southeastern states. The true population size was unknown due to the nature of the population, and the sample size of 384 respondents was determined using the Zigmund formula. The research discovered a significant correlation between brand innovativeness and consumer choice, suggesting that improving product technique to identify five dimensions of brand personality. The study revealed that brand sincerity, excitement, and competence significantly influenced consumer purchasing decisions, while brand sophistication and brand ruggedness did not. The findings provide valuable insights for brand and marketing managers to optimize their products' potential by strategically using brand personality models. The study however focused exclusively on work-related professionals in form contractors and painters in major commercial cities which streamline its applicability to a more general population. The use of students in the current study is a more general population.

More recently, Ulag et al. (2023) conducted a quantitative study to investigate the impact of brand personality and self-concept on the attachment of individuals to Apple products, which are known for their distinctive quality. The researchers distributed questionnaires to a sample of 100 individuals in Manado and analyzed the data obtained. The findings of the study showed a positive correlation between brand personality and brand attachment. Additionally, the results revealed that brand attachment has

a positive and significant effect on self-concept. A limitation of this study is its sole focus on Apple products thereby creating avenue for judgmental bias stemming from IOS users and Android users. Moreover, the IOS is an exclusive product of Apple and is used for only Apple devices. This bias is catered for in this study which focuses on Android phones which have various competing producers and brands in the industry

4. METHODS

4.1 Design and Sampling

The proposed research design for this study is a quantitative research design. Specifically, a cross-sectional survey design was used to gather data at a specific point in time. The research was conducted within the premises of a University. The target population for this study included all undergraduate students enrolled in the institution. The population consisted of both male and female students from various faculties, representing a diverse range of academic disciplines. The sample size was determined using a suitable sample size calculation formula, considering factors such as the desired level of confidence and margin of error. Based on a representative population of undergraduate students, the Slovin sample size determination formula yielded a sample size of 320. A random sampling technique was employed to ensure that each undergraduate student in the target population had an equal chance of being selected. This was achieved via the use of a multi-stage sampling technique which would involve stratification, systematic and simple random sampling.

Measures

A structured questionnaire was used to obtain relevant data from the study participants. The questionnaire consisted of three sections. The first section comprised items that captured the socio-demographic profile of the study participants while the second and third sections were made up of two standardized scales for measuring the independent variable and dependent variable within the context of the study. The three sections are described as follows;

- Section A: Demographic Profile

This section consists of items that capture the demographic profiles of the respondents. Items such as age, sex, study level, department etc. will be highlighted in this section. Some of the items were measured on nominal and ordinal scales.

- Section B: Perceived Brand Personality Scale

Aaker's Brand Personality Scale was used in this section to evaluate perceived brand personality of

android smartphones. The scale, developed by Jennifer Aaker, is a widely recognized framework used to assess and measure the personality traits associated with a brand. It helps marketers and researchers understand how consumers perceive and relate to brands based on human personality characteristics. Aaker's scale consists of five core dimensions, each representing a distinct brand personality trait: Sincerity, Excitement, Competence, Sophistication, and Ruggedness. Respondents are typically asked to rate a brand on each dimension using a Likert scale ranging from '1=strongly disagree' to '5=strongly agree', where they indicate the extent to which they perceive the brand as possessing each trait. The resulting scores provide insights into the brand's personality profile and how it is perceived by consumers. Aaker's Brand Personality Scale has been widely adopted and used in academic research and marketing practice.

- Section C: Brand Preference Scale

A brand preference scale for android smartphone brands was developed for the study. This instrument assessed the brand preference of mobile phones among the undergraduate students. It included a checklist of items asking participants to indicate their preferred mobile phone brands. It was structured in line with popular brand of mobile phones as used in existing literature.

4.2 Data Collection Procedure

The data collection procedure involved obtaining necessary approvals from the relevant university authorities and ethics committee. The researcher also obtained a letter of introduction from his institution to identify his studentship status. A pilot test for the study was then conducted to ascertain the validity and reliability of the questionnaire items. Having obtained a standardized questionnaire, copies of the questionnaire were deployed via an online survey to online platforms in which potential participants are hosted. This was achieved by utilizing a random sampling method to select specific departments in the available faculties that would participate in the study. The representative (i.e. a student executive) of the participating departments was then contacted by researcher through a research assistant in the University. The departmental representatives were implored to facilitate the dissemination of the survey link to online student platforms in the department. After the data collection, the researcher executed a data cleaning process to check for completeness and accuracy of the collected data for further analysis. At the end of the data collection process, a total of 302 responses were retrieved for data analyses. The data was downloaded in CSV format, and later transformed to SPSS for further analyses. The following ethical guidelines were considered during the data collection process.

• Informed Consent: Prior to data collection, participants were informed about the nature and purpose of the study and obtain their informed consent to participate. This was contained in the initial page of the

online survey.

• Confidentiality: The researcher ensured that participants' identities and responses remain confidential. This ensured that the data for analysis and reporting were anonymous.

• Voluntary Participation: The researcher ensured that emphasis was made on the voluntary nature of participation and that participants could withdraw at any time without any negative consequences.

4.3 Data Analysis

The collected data was analyzed using appropriate statistical techniques. The correlation between perceived brand personality and brand preference was determined using regression and analysis. Regression analysis is a valuable statistical tool that can provide insights into the relationship between variables, assess the strength and nature of that relationship, and make predictions based on the data. In the context of this study, using regression analysis is justified for several reasons: Firstly, the use of regression analysis would help to predict the impact of one or more independent variables (brand personality traits) on a dependent variable (phone brand preference). This is essential for understanding how changes in brand personality traits might influence consumers' choices of phone brands. Secondly, regression analysis quantifies the relationships between variables. It provides coefficients that show the direction (positive or negative) and strength of the relationship, offering a clear numerical representation of the impact of brand personality traits on brand preference. Thirdly, with multiple brand personality traits influencing brand preference, regression analysis enabled the researcher to simultaneously assess the impact of these traits. This is crucial as brand personality is often a combination of various traits, and understanding their collective influence is important for effective brand positioning.

5. RESULTS

Respondents' Demographic Characteristics

This section presents results that highlight the demographic characteristics of the respondents. Two major demographic variables were captured during the cross sectional survey; study level and age. Table 1 presents the percentage frequency distribution across respondents' level of study and age.

Table 1 below provides an overview of how the study participants were distributed across their level of study and sex. Results from the table show that all 5 levels of the undergraduate program were represented in the study sample. The percentage distribution shows that majority (25.5%) of the respondents were in their third level of study while 12.3% were in their fifth level of study. Freshers and sophomores made up 19.5% and 22.5% of the respondents respectively, while the remaining 20.2% were in their fourth level of study. In terms of their sex, there were more male respondents accounting for 62.9% of the study

participants. This gender gap implies that there may be discrepancies in the representation of male and female students in the sample, which should be taken into account when interpreting the study's findings and developing implications.

Table 1: Frequency Distribution of Respondents' Demographic Characteristics

		Frequency	Percent
Level of Study	100 Level	59	19.5
	200 Level	68	22.5
	300 Level	77	25.5
	400 Level	61	20.2
	500 Level	37	12.3
Sex	Male	190	62.9
	Female	112	37.1
	Total	302	100.0

Phone Brand Preference

In this section, the preferred phone brand as identified by each of the respondents is presented. Phone brand from which participants selected from were limited to eight which included Nokia, Samsung, Tecno, Motorola, Huawei, Xiaomi, Oppo and Vivo. Each participant was expected to select their most preferred brand from the list. Results of the participant's choice of preferred phone brand are presented in Table 2.

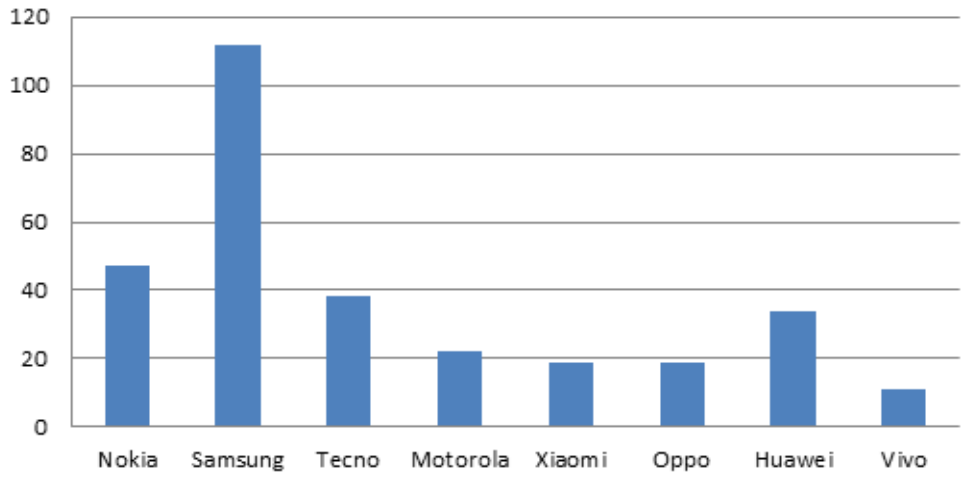
Table 2: Frequency of Phone Brand Preference

Phone Brand	Frequency of Brand Preference	Percent
Nokia	47	15.6
Samsung	112	37.1
Tecno	38	12.6
Motorola	22	7.3
Xiaomi	19	6.3
Oppo	19	6.3
Huawei	34	11.3
Vivo	11	3.6
Total	302	100.0

Results from the Table 2 shows that Samsung, with a frequency percentage count of 37.1%, was the most preferred Android Phone brand among undergraduate students, while the least preferred Android

Phone brand was Vivo with a frequency percentage count of 3.6%. Based on the frequency count of preferred phone brands, a phone brand ranking was computed for the list of eight phones in the study as presented in Figure 1.

Figure 1: Brand Ranking Based on Preference



Based on the frequency count for phone brand preference, the highest ranked phone brand among this population is Samsung (1st) while the least ranked is Vivo (8th). The Nokia brand is the second in rankings, followed by Tecno (3rd), Huawei (4th), Motorola (5th), Xiaomi (6th) and Oppo (7th). It should be noted that these rankings are based on subjective preferences for the phone brands among the study population. However, the frequency count gives useful information on the popularity and preference of various phone brands among the population under study. It provides a view into the smartphone market's competitive environment and can assist firms and marketers in understanding customer preferences in order to make educated decisions about their product offerings and marketing strategies.

Brand Personality

The brand personality of the various phone bands in the study as perceived by the participants was sought and analysed. The mean summary of the brand personality that each of the brand is believed to exude are displayed in Table 3

Table 3: Perceived Brand Personality of Phone Brands

Brand Personality	Nokia	Samsung	Tecno	Motorola	Xiaomi	Oppo	Huawei	Vivo
Sincerity	16.31	16.09	16.18	16.09	16.15	15.94	16.55	11.27
Excitement	12.90	16.58	16.81	16.61	16.42	16.91	15.15	16.40
Competence	16.74	17.23	16.84	16.77	16.52	14.89	16.38	11.37
Sophistication	16.10	16.66	16.50	16.57	16.73	16.05	16.73	13.63
Ruggedness	16.88	16.68	16.36	16.59	16.31	15.42	16.39	12.54

The table displays data from the survey participants on the perceived brand personality of several phone brands. The rows reflect distinct aspects of brand personality, while the columns represent several phone brands (Nokia, Samsung, Tecno, Motorola, Xiaomi, Oppo, Huawei, and Vivo). The numerical values in the table indicate the evaluations provided to each brand by research participants on each facet of brand personality. The higher the mean rating, the stronger the brand's correlation with the corresponding personality attributes. A summary of the most distinct personality trait for each phone brand is provided below

• Sincerity: Huawei gets the greatest sincerity mean rating (16.55), suggesting that it is regarded as the most honest and trustworthy brand. In this dimension, Vivo receives the lowest mean rating (11.27).

• Excitement: Oppo has the highest excitement mean rating (16.91), indicating that it is considered as the most thrilling and adventurous brand. In this dimension, Nokia has the lowest mean rating (12.90).

• Competence: Samsung gets the highest competence mean rating (17.23), suggesting that it is recognized as the most competent and effective brand in addressing customer demands. In this dimension, Vivo receives the lowest mean rating (11.37).

• Sophistication: Xiaomi and Huawei obtain the greatest sophistication mean ratings (16.73), indicating that they are viewed as the most sophisticated and fashionable brand. In this dimension, Vivo receives the lowest mean rating (13.63).

• Ruggedness: Nokia gets the greatest ruggedness mean rating (16.88), meaning that it is regarded as the most tough and durable brand. In this dimension, Vivo receives the lowest mean rating (12.54).

In terms of honesty, competence, and sophistication, Huawei tends to be evaluated favourably, indicating a well-rounded brand personality. Oppo is regarded as the most intriguing brand, presumably appealing to daring people. Xiaomi is connected with refinement, suggesting its attraction to people seeking fashionable and polished goods. Nokia excels at toughness, making it appealing to people who lead active lives. Vivo, on the other hand, scores lower ratings across the board, indicating that it may need

to develop its brand identity in order to better resonate with consumers. This suggests that its popularity may be borne out of a well-rounded balance of all the brand personality traits. Knowing the way these various phone brands are perceived as regards their brand personality may help direct marketing and branding initiatives to target certain customer categories more effectively.

Predictive Role of Brand Personality on Brand Preference

The predictive role of brand personality on phone brand preference was sought. This was analysed using the multiple regression analysis which assesses how the dependent variable changes concerning the variations in the independent variables while controlling for their combined effects. The key idea behind multiple regression is to fit a linear equation that best represents the relationship between the dependent variable and the independent variables. Results are presented in Table 4

Table 4: Multiple regression summary showing influence of brand personality traits on brand preference

Predictors	R	R2	F	Sig	Beta	t	Sig.
Sincerity					.031	.275	.784
Excitement					-.055	-.451	.652
Competence	.240	.058	3.378	.006	-.065	-.546	.585
Sophistication					.231	2.222	.027
Ruggedness					-.312	-2.765	.006

Dependent Variable: Phone Brand Preference

Results from Table 4 show that brand personality as a composite factor is a significant predictor of phone brand preference; as all the five brand personality traits jointly predicted ($F=3.378$; $p<.05$) and accounted for 5.8% of the variance in phone brand preference among the study participants. However, further analysis on the independent prediction of each brand personality trait on phone brand preference shows that traits of sophistication ($\beta=.231$; $p<.05$) and ruggedness ($\beta=-.312$; $p<.05$) were significant predictors of phone brand preference. The results imply that the variability of phone brand choice is greater when the brand personality trait of sophistication and ruggedness are seen to exude from the product.

6. Discussion of Findings

Results of ranking of preferred android phones among the study participants showed that Samsung was mostly preferred by majority of the students while Vivo was the least preferred choice. The results imply that Samsung has been able to build a brand reputation that is highly rated among the student population in Nigeria. This may be attributed to several features of the brand, including its marketing strategies and brand promotion interventions. When compared to results obtained from other related

studies, a relatively high measure of support can be identified in the literature. For instance, in the study conducted by Naveen et al. (2023) on consumer preference towards Samsung mobile phone with reference to Chennai city, 46% of the respondents preferred to buy Samsung mobile based on previous user experience with more around 40% of respondents willing to buy in person. Similarly, Doan Hoang Hai, (2023), explained that Apple and Samsung are the two "kings" in the smartphone market, and the competition is quite large, each company has its own special points, competing in every market, as their legal battle has not affected either revenue. The results are indicative of a high acceptability of Samsung smartphones among the Generation Z cohort of Nigerian students.

In line with the second objective of the study, results on the perceived brand personality as exuded by the selected android mobile phones were sought. Results obtained point to the assertion that mobile phone users hold different perceptions of the brand personalities of different phones, irrespective of their smartphone choices. The results showed that Huawei brand was perceived as having the highest levels of sincerity traits, Oppo emerged as being perceived as the most exciting phone brand, Samsung was perceived as being a highly competent brand, Xiaomi obtained the greatest sophistication mean ratings while Nokia emerged as having the most rugged brand personality. In lending empirical support for the sincerity trait exuded by Huawei phone brands, Dmitrijevs (2020) attributed this to the sincere pricing system of the brand which could be regarded as being one of the cheapest phones in the industry, despite its ability to compete favourably with other phone brands in other technical areas. The exciting trait of the Oppo phone brand is highlighted by Zhao Yuan (2014) who carried out a study of the corporate brand marketing strategy in micro-film advertising based on the example of OPPO smart phone's micro-film advertising. The results showed that the micro-film advertising of OPPO mobile phones has clear audience positioning. By utilizing the celebrity effect and with innovative content as well as excellent production, Oppo brands passed on brand value and built positive brand image for the exciting nature of the enterprise.

On another hand, Samsung has leveraged on its use of needs-based designs to portray its brand personality of competence within the smartphone industry. Samsung now has more than 1,600 designers. Its innovation process begins with research conducted by multidisciplinary teams of designers, engineers, marketers, ethnographers, musicians, and writers who search for users' unmet needs and identify cultural, technological, and economic trends. The company has built an impressive record on design, garnering more awards than any other company in recent years. The bold designs of its televisions often defy conventional style. With its Galaxy Note series, Samsung introduced a new category of smartphone—the phablet—which has been widely copied by competitors. Design is now so much a part of its corporate DNA that top leaders rely on designers to help visualize the future of the entire company. The trait of sophistication as perceived to be exuded by Xiaomi brands may be a reflection of its designs

which is appealing to its wide customer base. As opined by Gireesan (2017), the company's version of the Android operating system and MIUI skin, with its design, app marketplace, and functionalities, has established a community of users who form a crucial part of Xiaomi's customer base and contribute to the company's 2drive for market awareness. This ecosystem is a massive source of revenue as indicated in 2015, when sales from the platform reached $750 million. Finally, HMD Global's Nokia brand was perceived as being rugged. According to Muller and Bevan-Dye (2017) the phone's rugged features include a durable housing that makes it resistant to shock and water damage, making it ideal for outdoor activities and those who are always on the go.

While these results have marketing implications for both consumers and producers, it should be noted that many other similar studies have produced relatively differing outcomes, which implies that consumer subjectivity may play a major role in brand personality traits that are attributed to specific phone brands. For instance, Solo-Anaeto and Ajilore (2016) studied the significance of smartphone brand personality among undergraduates at Babcock University in which Aaker's brand personality model was used to describe various smartphone brands. After analysis, Samsung, iPhone, and Blackberry were found to be the top brands based on their perceived brand personality dimensions. Samsung was associated with the dimensions of ruggedness, sophistication, and excitement, while Apple was perceived to have a competent, sophisticated, and exciting brand personality. Blackberry, on the other hand, was perceived to have competent and rugged brand personalities.

The third study objective sought to understand the predictive role of brand personality attributes on consumers' brand preference. The analysis demonstrates that when considering all five brand personality traits together as a composite factor, they collectively have a significant predictive power for phone brand preference. This suggests that the overall image that a brand projects, encompassing traits such as sincerity, excitement, sophistication, ruggedness, and competence, plays a role in influencing consumers' preferences for specific phone brands. This result aligns with previous literature that highlights the importance of brand personality in shaping consumer perceptions and choices. For instance Bairrada et al. (2019) obtained a positive relationship between brand personality, brand love, and self-disclosure, while also providing resistance to negative information. Similarly, the findings of Ulag et al.'s (2023) study showed a positive correlation between brand personality and brand attachment. Additionally, the results revealed that brand attachment has a positive and significant effect on self-concept.

Upon analyzing the independent effects of each individual brand personality trait on phone brand preference, the traits of sophistication and ruggedness stood out as significant predictors. The positive beta coefficient indicated that the trait of sophistication has a significant positive influence on phone brand preference. This implies that consumers are more likely to prefer phone brands that project an image of sophistication, elegance, and refinement. This result resonates with existing literature that

suggests consumers often gravitate toward brands that align with their desired self-image or social status (Ulag et al., 2023). The negative beta coefficient for ruggedness suggests an interesting finding. In this context, ruggedness refers to traits such as toughness, durability, and resilience. The negative coefficient suggests that, contrary to expectations, a brand personality that exudes ruggedness might deter consumers' preference for a particular phone brand. One possible explanation could be that consumers associate ruggedness with bulkiness or lack of modernity, which might not align with their preferences for sleek and modern phone designs.

The results indicate that consumers' phone brand preferences are influenced by specific brand personality traits, especially sophistication and ruggedness. This suggests that phone manufacturers and marketers should strategically cultivate and communicate these traits in their branding and messaging to appeal to their target audiences. Empirical support for this result can be observed in Ojiula and Nnabuko's (2021) study which revealed that brand sincerity, excitement, and competence significantly influenced consumer purchasing decisions, while brand sophistication and brand ruggedness did not. The findings provide valuable insights for brand and marketing managers to optimize their products' potential by strategically using brand personality models. The study however focused exclusively on work-related professionals in form contractors and painters in major commercial cities which streamline its applicability to a more general population. The use of students in the current study is a more general population.

7. Conclusion

The discussion presents the results of a study that aimed to rank preferred Android phone brands among students, explore perceived brand personalities of these brands, and analyze the predictive role of brand personality traits on consumers' brand preferences. The study revealed that Samsung was the most preferred brand among students in Nigeria, with Vivo being the least preferred. This suggested that Samsung had built a strong brand reputation among Nigerian students. The study also found that different brand personalities were attributed to different phone brands. Huawei was seen as sincere, Oppo as exciting, Samsung as competent, Xiaomi as sophisticated, and Nokia as rugged. These perceptions were often influenced by factors like pricing strategies, marketing, and design. Importantly, the study demonstrated that overall brand personality traits collectively predicted phone brand preferences, with traits like sophistication and ruggedness standing out as significant predictors. Consumers were more likely to prefer brands projecting sophistication, while ruggedness had a negative influence on brand preference. These findings offered insights for marketers to strategically shape their branding efforts based on these personality traits.

In conclusion, the study sheds light on the preferences and perceptions of Android phone brands among Nigerian students. Samsung emerged as the top choice due to its established brand reputation, while

Vivo lagged behind. The study underscored the impact of perceived brand personalities, with Huawei, Oppo, Samsung, Xiaomi, and Nokia embodying different traits. This diversity was influenced by factors such as pricing strategies, marketing techniques, and design philosophies. The results reinforced the importance of brand personality in influencing consumer preferences, with sophistication positively affecting brand choices, and ruggedness potentially deterring preferences. This study provides valuable insights for both manufacturers and marketers to tailor their strategies, aiming to resonate with consumers through aligning brand personalities with their preferences. However, it's important to acknowledge that individual consumer subjectivity plays a role, and these findings should be considered in conjunction with other studies. Overall, the research offers a comprehensive understanding of the intricate relationship between brand personalities and consumer preferences in the smartphone market.

Marketing Implications

The results obtained have several marketing implications which may be useful indices for the supply chain decisions among manufacturers and marketers in the Nigerian smartphone industry. These implications can guide marketing strategies, brand positioning, and communication efforts for phone manufacturers and marketers. For instance the study's finding that Samsung was the most preferred phone brand among the participants highlights the importance of building a strong brand reputation. For phone manufacturers, this underscores the significance of consistent branding efforts, marketing strategies, and product quality. This positive reputation can be capitalized on by emphasizing Samsung's strengths and unique features in marketing campaigns to further solidify its brand preference.

The study's identification of different perceived brand personalities among various phone brands presents an opportunity for marketers to align their branding efforts with the desired image they want to project. For instance, if Huawei is perceived as sincere due to its pricing strategy, the marketing messages could emphasize affordability and value for money. Similarly, Oppo can leverage its exciting brand perception in its advertising and promotional content to attract consumers seeking innovative and exciting products. The correlation between Samsung and competence aligns with its reputation for innovation and design. Samsung's focus on needs-based designs and involving multidisciplinary teams of designers can be highlighted in marketing materials. This would emphasize the brand's commitment to providing technologically advanced and competent products, potentially attracting consumers who prioritize functionality and advanced features.

The perceived sophistication of Xiaomi and ruggedness of Nokia provide directions for their marketing strategies. Xiaomi can emphasize its elegant designs and user-friendly features to cater to consumers looking for sophisticated products. On the other hand, Nokia can capitalize on its durability and resilience by targeting consumers who value reliability and sturdiness in their phones. The study's observation that

the composite brand personality traits collectively predict brand preference underscores the importance of holistic brand perception. This implies that a well-rounded brand personality can contribute to consumers' affinity for a particular brand. Marketers can leverage this insight to create comprehensive brand experiences that resonate with consumers on multiple personality dimensions.

The mention of differing outcomes in similar studies underscores the subjectivity of brand personality perception. This emphasizes the need for flexible marketing strategies that consider diverse consumer preferences. Customized marketing campaigns that align with various aspects of brand personality can be developed to resonate with different consumer segments. While the study focused on students, the implications can extend to a broader population. This suggests that the identified brand personality traits and their influence on brand preference could apply to various consumer segments, allowing marketers to tailor their strategies accordingly. By understanding the perceptions of brand personality traits associated with different phone brands, companies can better communicate their brand values and features, thereby increasing their appeal to diverse consumer segments.

Based on the findings of this study, several managerial implications can be drawn for Android phone manufacturers and marketers targeting the Nigerian student market. Managers of android phone companies can leverage on the strength of brand reputation. This is because the study highlights the importance of building and maintaining a strong brand reputation. Samsung's success in this study can be attributed to its established brand reputation. Therefore managers should invest in consistent product quality, customer service, and positive user experiences to enhance their brand reputation among the target audience. Managers should also focus on developing and projecting unique brand personalities that resonate with the target audience. Understanding the traits associated with successful brands like Huawei (sincere), Oppo (exciting), and Xiaomi (sophisticated) can guide managers in aligning their messaging, design, and marketing strategies to convey specific personality traits.

8. Recommendations for Future Studies

While the study focused on students, expanding the sample to include a broader demographic range, such as professionals, different age groups, and socioeconomic backgrounds, can provide a more comprehensive understanding of brand preferences and personality traits. There is also need to consider conducting a longitudinal study to track changes in brand preferences and personality traits over time. This can help identify evolving trends and factors influencing shifts in consumer perceptions. Furthermore, extending the research to include participants from different cultural backgrounds may unearth moderating variables, as brand preferences and personality perceptions can vary significantly across cultures. This cross-cultural analysis can provide valuable insights into global brand strategies.

Future studies may also benefit from adopting mixed methods which would complement quantitative data with qualitative insights through in-depth interviews. These interviews can offer deeper understanding of why certain brand personalities are associated with specific brands and provide context to the quantitative findings. Such studies may also explore how other smartphone brands are strategically using brand personality traits in their marketing. This can provide a comparative perspective and help identify areas of opportunity or differentiation while investigating how user experiences and satisfaction levels contribute to the formation of brand personality perceptions. Conducting surveys or focus groups about users' experiences with different brands can offer richer insights. Incorporating these recommendations can enhance the depth, breadth, and applicability of the study's findings, providing a more nuanced understanding of the relationship between brand personalities and consumer preferences in the dynamic smartphone market.

Data Availability Statement

The data that support the findings of this study are openly available at https://osf.io/a6xw4/?view_only=00130ce421f8423c849b360eae4b632c

Conflict of Interest Statement

The author declares that there are no known competing financial or personal interests that could have appeared to influence the work reported in this paper

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Impacts of Foreign Direct Investment on Firm Level Performances: Empirical evidence from UK firms

By

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Abstract

FDI has been growing at a spectacular pace all over the world and its impact on performance of the economy is also becoming pervasive. However, majority of the studies targeted on FDI are focus on analyzing the macroeconomic impacts of FDI. On the other hand, this study analyses the impacts of FDI treatment on microlevel performance variables of firms like impacts of FDI on employment, productivity, wages and research & development intensity of firms. The study is conducted on 11,323 numbers of UK firms among which 4460 are treated with FDI in 2016 while the remaining 6863 are control groups. Using augmented inverse probability weighting estimator, the study found that the FDI treatment of 2016 has positive significant impact on employment capability, total factor productivity and research and development intensity of the firms in 2017 while it has negative significant impact on wages of the firms in 2017. Similarly, among different types of FDI treatment, Technology intensive FDI treatment has highest employment generating capabilities and has high negative impact on wage of the firms, export oriented FDI treatment has positive significant impact on total factor productivity of the firms and Domestic market seeking FDI treatment has significant positive impact on research and development intensity of the firms.

Keywords: FDI treatment; AIPWE; treatment effects; employment productivity; research and development

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1. Introduction

1.1 Background of the study and problem statement

FDI strategies have an uneven impact on firm performance, depending on the purpose of the investment (e.g., efficiency-seeking or market-seeking FDI) and its destination (advanced or emerging economies); firms may or may not modify their productive or financial structure through FDI, with potentially strong effects on productivity and employment (Borin and Mancini, 2015). In a context of increasing foreign competition, stagnating productivity and internal recession, FDI may represent a way to strengthen a firm's competitive position or to ensure its survival; on the other hand, off-shoring activities have always generated concern in public opinion regarding the potential negative effects on wages. Via initiating competition, the FDI is also thought to have positive impacts on total factor productivity of domestic firms (Ayumu, 2012). Hence there is a need to empirically evaluate the impacts of FDI intervention on firm level variables like employment, wage, total factor productivity.

To evaluate the ex-post effects of FDI accurately, we need to take into account several endogeneity issues with regard to the ex-ante causal relationship between firm level performance and FDI intervention. Accordingly, because of ex-ante covariates, the ex-post performance of the firms might reflect not only the impacts foreign investment, but also pre-existent advantages in terms of technology intensity, access to port, ex-ante firms total factor productivity, types of ownership, ex-ante intensity of the firm to engage in research and development and etc... Thus, tackling this issue requires an appropriate estimation procedure. Here in this paper, I tried to solve the issues using the model, AIPWE. As far as I know the papers conducted earlier tried to estimate the impacts of FDI on employment and total factor productivity of firms. In this paper in addition to the previous research works I included the impacts of FDI on wages and intensity of research and development with the case study of selected UK firms. In addition, in this paper, the impacts of different types of FDI intervention on firm level performance variables are analyzed.

1,2 Objectives of the paper

1.2.1 General objective

The main objective of the paper is to empirically analyze the impact of FDI intervention on firm level performance variables using the impacts assessment econometrics techniques.

1.2.2 Specific objectives

- To assess impacts of presence of FDI intervention on the key firm level variables
- To assess impacts of different types of FDI intervention on each firm level performance variables
- To draw some conclusion and policy recommendations

2. REVIEW OF EMPIRICAL LITERATURES

One of the recent literatures conducted on the impacts of FDI on firm level variables are the one entitled "FDI and Firm Performance: An Empirical Analysis of Italian Firms" which is conducted by Borin and Mancini, 2015.

They built a brand-new firm-level dataset able both to represent the extent of Italian firms' foreign activity, total factor productivity (TFP) and employment. They sampled 9263 firms, observed from 1988 to 2011. The total number of foreign direct investments is 5601. Then they use a PSM procedure to analyze the causal relationship between FDI and firm level performance. The variables included in the regression are levels and changes in TFP, employees and stock of capital, firm age, financial leverage and sectoral and regional dummies. To analyze the causal relationship between FDI and firm level performance, they estimated probit based difference – indifference PSM model given by the equations

$$ATT = E(Y^{FDI} - Y^{DOM}/d = 1) = E(Y^{FDI}/d = 1) - E(Y^{DOM}/d = 1)$$

$$ATT_{t*+s} = E(\Delta Y^{FDI}_{t*+s} - \Delta Y^{DOM}_{t*+s}/X, d = 1).$$

The results based on the PSM procedure indicates that, compared to analogous domestic firms, companies that had FDI show higher growth rates both in terms of output (employment, turnover and value added) and input (employees and fixed capital) after the investment.

Another literature done on similar area is the one conducted by Tanaka Ayumu, 2012, entitled “The Effects of FDI on Domestic Employment and Workforce Composition” and conducted on Japanese economy. The researcher employed firm-level data from the Basic Survey of Japanese METI. The study employs PSM techniques to examine the effects on domestic employment of Japanese manufacturing, wholesale, and service sector firms that initiated FDI(FDI) during 2003-2005. In the paper the actual PSM model is specified as follows.

The causal effects of firm i's FDI on the outcome variables, Δy, is expressed as Δy_(i,t+s)^1-Δy_(i,t+s)^0.

Where y are log of sales, exports, employment and the share of non-regular workers. Since the Δy_(i,t+s)^0 is unobservable, the researcher constructs appropriate counterfactual by adopting PSM. The ATT is estimated based on equation

$$\delta = E(\Delta y^1_{i,t+s} - \Delta y^0_{i,t+s}/D_{it} = 1, = \delta = E(\Delta y^1_{i,t+s}/D_{it} = 1) - E(\Delta y^0_{i,t+s}/D_{it} = 1)$$

where Dit indicates whether firm i is intervened with FDI for the first time in year t.

Results of the model reveal that, employment growth was higher among firms that initiated FDI than those that remained exclusively domestic. Moreover, manufacturing firms experienced higher growth in the share of non-regular workers. In addition, FDI's positive employment impacts were accompanied by positive impacts on overall sales and/or export, positive impacts on export sales in manufacturing and wholesale sectors and on overall sales in manufacturing and services sectors.

Another paper is the one conducted by Masso et.al. (2007), which entitled “The Impact of outward FDI on home-country Employment in a Low-Cost Transition Economy”. The paper analyses the home-country employment effect in Estonia. The data from Estonian firms between 1995 and 2002 was studied with regression analysis of PSM. The results indicate that in general, outward FDI had a positive impact on the home-country employment growth. Comparing direct investors (domestic firms investing abroad) and indirect investors (foreign-owned firms investing abroad), the former group had a stronger home-

country employment effect due to their smaller pre-investment size and because the subsidiaries of indirect investors are served from other locations rather than from Estonia. The positive employment effect was much stronger in the case of investments made after 1999 due to the better macro-economic performance of Estonia from the year 2000 onwards. Services firms demonstrated a stronger home-country employment effect than manufacturing firms. The result of the paper implies that the logic of the outward investments from low-cost transition and developing economies differs from that of high-income countries.

There are also other studies which have investigated the causal effects of FDI on firm level variables using firm-level data. The dominant studies include Barba Navaretti et al. (2010) for French and Italian firms, Castellani et al. (2010) for Italian firms, Debaere et al. (2010) for South Korean firms, Desai et al. (2009) for U.S. firms, Edamura et al. (2011) for Japanese firms and Wagner (2011) for German firms. These studies suggest that FDI need not have adverse effects on domestic employment, although Debaere et al. (2010) and Edamura et al. (2011) find that FDI directed to developing countries decreases the growth rate of a firm's domestic employment. As summarized in Wagner (2011), most previous studies reveal that effects in general and on employment in particular are broadly neutral or result in a small net gain in offshoring firms. However, the lay public in developed economies often fears that FDI will reduce domestic employment.

As an extension to earlier studies, this study seeks to uncover the causal impacts of FDI, using firm-level data and AIPW method. Unlike previous studies, this more rigorous study includes, additional issues like the impacts of FDI on firm level research and development as well as on wages of the firms. In addition, in the study the impacts of different types of FDI are also considered. The study also includes firms with different level technology intensity and different types of ownership.

3. METHODOLOGY OF THE STUDY

3.1. Description of data and variables

This study is entirely made based up on FDI data of UK economy for the year 2015-2017 from a number of 11,323 firms. The data is obtained from Nottingham university school of business' data bank (https://www.nottingham.ac.uk/business/research/database-resources.aspx). The 2017 variables are taken as the outcome variable while 2015 variables are taken as covariates along with variables, types of technology, ownership and access to port. The FDI 2016 and is taken as the treatment variable in which the impacts of FDI by type is also assessed. In order to obtain better covariate balance, the variable TFP is converted to natural logarithm and the log variables are converted to natural logarithm (first by unlogging with antilog method and then by taking natural logarithm of unlogged variable). The motive behind is, in most case economic variable exhibits natural logarithm growth than common logarithm growth. In addition, four interaction dummies are constructed by combining technology intensity of the firms with types of ownership. Both descriptive and Econometrics work of the paper are conducted with the aid of STATA v.16 software package.

The details of variables included in the study and the nature of data are described in table 1 below.

Table 1: description of variables

Variable	Storage type	Display format	Type	Variable label	Role
FDI2016	byte	%9.0g	Dummy	Foreign direct investment dummy in 2016	Treatmer
FDITYPE2016	byte	%28.0g	Multinominal/ ordinal	Type of FDI; 0=No FDI, 1=export oriented FDI, 2=technology intensive FDI & 3=domestic market seeking FDI	Treatmer
lnTFP2017*	float	%9.0g	Cont.	Natural logarithm of total factor productivity in 2017	Outcome
lnemp2017*	float	%9.0g	Cont.	Natural logarithm of employment in 2017	Outcome
Lnemp2017*	float	%9.0g	Cont.	Natural logarithm of wages in 2017	outcome
EXP2017	float	%9.0g	Cont.	Export intensity in 2017	Outcome
RD2017	float	%9.0g	Dummy	Research and development dummy in 2017	Outcome
EXP2017	float	%9.0g	Cont.	Export intensity in 2017	Outcome
OWN	byte	%17.0g	Multinominal	Type of firm ownership; 1= listed companies, 2=subsidiaries, 3= independent & 4=state	Covariat
TECH	byte	%27.0g	Ordinal	Industry technology intensity; 1=low-technology industries, 2= medium low-tech industries&3= medium high-tech industries	Covariat
PORT	byte	%21.0g	Dummy	Access to port; 0=no ports within 500kM & 1= ports within 500KM	Covariat
lnwages2015*	float	%9.0g	Cont.	Natural logarithm of wages in 2015	Covariat
lnTFP2015*	float	%9.0g	Cont.	Natural logarithm of total factor productivity in 2015	Covariat
lnemp2015*	float	%9.0g	Cont.	Natural logarithm of employment in 2015	Covariat
lnDEBTS2015	float	%9.0g	Cont.	Natural log of debt in 2015	Covariat
EXP2015	float	%9.0g	Cont.	Export intensity in 2015	Covariat
RD2015	float	%9.0g	Dummy	Research and development dummy in 2015	Covariat
statemedhightech*	float	%9.0g	Dummy	1=state owned firms which operate in medium high technology industry, 0=otherwise	Covariat
indepmedhightech*	float	%9.0g	Dummy	1=independently owned firms which operate in medium high technology industry, 0=otherwise	Covariat
Submedhightech*	float	%9.0g	Dummy	1=subsidiary firms which operate in medium high technology industry, 0=otherwise	Covariat
Listcmedhightech*	float	%9.0g	Dummy	1=independently owned firms which operate in medium high technology industry, 0=otherwise	Covariat

*: - indicates the newly generated or modified variables

3.2. Model Specification

In this section the impacts of FDI 2016 treatment on selected four firm level variables; employment, wages, total productivity and research & development are estimated with PSM based estimators. After comparing available PSM alternatives, the AIPWE is widely applied in this work. Here I tried to shortly illustrate specification of this model.

Assume the propensity score model is defined as the conditional probability of receiving the FDI treatment given the covariates Xi. Following Rosenbaum and Rubin (1983), we assume that the true propensity score is bounded away from 0 and 1:

$$0 < P_r(T_i = 1/X_i = x) < 1 \text{ for any } x \in X \quad \text{.....(4.1.)}$$

Rosenbaum and Rubin (1983) showed that if we further assume the ignorability of treatment assignment, i.e.,

{Y_i (1),Y_i (1)} □T_i(X_i)……..(4.2)

Where Y_i (t) represents the potential outcome under the treatment status t□{0, 1}, then the treatment assignment is ignorable given the (true) propensity score π(Xi): {Y_i (1),Y_i (1)} □T_i (X_i)

In observational studies, however, the propensity score is unknown and must be estimated from the data. Typically, we assumed the parametric propensity score model is πβ (Xi). Where πβ (Xi) is

$$P_r(T_i = 1/X_i) = \pi_\beta(X_i) \quad \text{.....(4.3.)}$$

Where β□Θ is L-dimensional column vector of parameters to be estimated. In this paper logistic cumulative distribution function is chosen to estimate the parameters. The specification of logit in this case is

$$\pi_\beta(X_i) = \frac{e^{(X_i{}^T\beta)}}{1+e^{(X_i{}^T\beta)}} \quad \text{.....(4.4.)}$$

Then the log likelihood of the function can be maximized to estimate propensity score that predicts the observed treatment assignment well.

If the propensity score model is estimated, a well-known weighting estimator is the IPW estimator which is given by

$$\widehat{ATE}_{IPW} = \frac{1}{n}\sum_{i=1}^{n}\left\{\frac{X_iY_i}{\hat{\pi}(Z_i)}\right\} - \frac{(1-X_i)Y_i}{1-\hat{\pi}(Z_i)} \quad \text{.....(4.5)}$$

Where π^(Z_i) is the estimated propensity score.

However, this simple IPW estimator is believed to have poor small sample properties when the propensity score gets close to zero or one for some observations. This can be seen from equation (4.5), in that division by numbers close to zero will lead to high variance in the estimator. Specifically, units that

receive treatment and very low propensity scores will provide extreme contributions to the estimate. Similarly, units that receive control and very high propensity scores will provide extreme contributions to the estimate. In some cases, these extreme contributions can produce estimates that are not bounded within the plausible range for ATE.

In order to solve this shortcoming a number of improvements to the basic IPW estimators are made. One way the IPW estimator can be improved is by fully utilizing the information in the conditioning set. The conditioning set Z contains information about the probability of treatment, but it also contains predictive information about the outcome variable. The AIPW estimator (□ATE□_AIPW)ˆ efficiently uses this information in the following manner:

$$\widehat{ATE}_{IPW} = \frac{1}{n}\sum_{i=1}^{n}\left\{\left[\frac{X_iY_i}{\hat{\pi}(Z_i)} - \frac{(1-X_i)Y_i}{1-\hat{\pi}(Z_i)}\right]\right.$$
$$\left. - \frac{(X_i-\hat{\pi}(Z_i))Y_i}{\hat{\pi}(Z_i)(1-\hat{\pi}(Z_i))}\left[\left(1-\hat{\pi}(Z_i)\right)E(Y_i/X_i=1,Z_i)+\hat{\pi}(Z_i)E(Y_i/X_i=0,Z_i\right]\right\}$$

where the first line of equation (4.6) corresponds to the basic IPW estimator, and the second

line adjusts this estimator by a weighted average of the two regression estimators. This estimator is unbiased and consistent and has also double robustness.

The treatment, outcome and covariate variables employed in the model are as discussed in chapter two. Throughout the econometrics regression part logit is used for estimating the treatment model while outcome model estimated with different models ranging from linear to weighted mean and logit in accordance with estimated alternative PSM.

In order to assess covariate balance after estimation the two main techniques employed are:

I. Standardized mean difference: SMD is given by the following equation:

$$SMD = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s_1^2+s_2^2)/2}} \quad \text{.....(4.7)}$$

Where, where $\overline{X_1}$ and $\overline{X_2}$ are sample mean for the treated and control groups, respectively; S_1^2 and S_2^2 are sample variance for the treated and control groups.

Similarly, *SMD* for dichotomous variable is given by

$$SMD = \frac{\widehat{P_1} - \widehat{P_2}}{\sqrt{[\widehat{P_1}(1-\widehat{P_1})+\widehat{P_2}(1-\widehat{P_2})]/2}} \quad \text{.....(4.8)}$$

where $\widehat{P_1}$ and $\widehat{P_2}$ are prevalence of dichotomous variables in the treated and control groups, respectively.

The rule of decision is a SMD ¬less than or equal to 0.05 is a sign of good balance. But is still SMD up

to 0.1 is tolerable. i.e., SMD greater than 0.1 can be considered as a sign of imbalance.

Variance ratio: Variance is the second central moment about the mean of a random variable. It reflects one aspect of the property of a probability distribution. An ideal balance after PSM is that all central moments are the same between the treated and untreated groups. The variance ratio is given by (S_2^2)/(S_1^2) .A variance ratio of 1 in matched sample indicates a good matching, and a variance ratio below 2 is generally acceptable.

4. FINDINGS OF THE STUDY

4.1. Descriptive Statistics

For the purpose of visualizing the basic properties of the variables the basic descriptive statistics are computed as follows.

I. Summary statistics of continuous variables

Table 2: summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
EXP2015	11,323	.1593435	.0798147	.0103205	.4831533
lnTFP2015	10,527	.991059	.8000707	-8.45511	2.429836
lnwages2015	11,323	16.88467	8.839304	-16.88208	51.65047
lnemp2015	11,323	10.15779	7.000314	-14.34226	36.82532
lnDEBTS2015	11,323	1.160585	.8117215	-.4601634	2.992849
lnemp2017	11,323	11.58312	7.125893	-14.31667	37.73533
lnwages2017	11,323	11.5364	7.098451	-14.24183	39.2409
lnTFP2017	10,886	1.166264	.7199195	-6.430572	2.469065
EXP2017	11,323	.2696827	.1083555	.0187976	.9501169

II. Mean comparison ‘t’ test

Table 3: mean comparison between treated and non-treated group

Variable	Non-treated (FDI =0)		Treated (FDI=1)		Mean difference (1)-(0)
	Mean	Std. error	Mean	Std. error	
lnDEBTS2015	1.177552	.0096983	1.134475	.0123341	-. 04307*
EXP2015	.130521	.000825	.2036954	.0011344	.07317*
EXP2017	.2468864	.0010403	.3047615	.0019147	.0578*
lnTFP2015	1.031246	.009709	.9276847	.0129544	-.10356*
lnTFP2017	1.172828	.0088445	1.156156	.0110287	-.0166717
lnwages2017	9.834509	.0851483	14.15525	.0947623	4.320744 *
lnwages2015	17.33595	.106977	16.19023	.1311624	-1.145718 *
lnemp2015	8.670873	.084876	12.44585	.0943527	3.774973*
lnemp2017	9.821387	.0852256	14.29405	.0948121	4.472663*

*: -denotes mean differences between treated and non-treated groups are statistically significant at 5% level of significance

IV. correlation analysis

Table 4:analysis of correlation among the variables

```
. correlate FDI2016 DEBTS2015 EXP2015 RD2015 EXP2017 RD2017 lnTFP2015 lnTFP2017 lnwages2017 lnwages2015 lne
(obs=10,527)
```

	FDI2016	DEB~2015	EXP2015	RD2015	EXP2017	RD2017	lnT~2015	lnT~2017	lnw~2017	lnw~2015	ln
FDI2016	1.0000										
DEBTS2015	-0.0276	1.0000									
EXP2015	0.4461	0.0702	1.0000								
RD2015	0.0166	-0.0070	-0.0019	1.0000							
EXP2017	0.2613	0.0827	0.8879	-0.0012	1.0000						
RD2017	0.0772	-0.0031	0.0324	0.1630	0.0146	1.0000					
lnTFP2015	-0.0631	-0.0309	0.0299	0.0329	0.0381	-0.0076	1.0000				
lnTFP2017	0.0241	-0.0371	0.0724	0.0301	0.0635	-0.0003	0.9334	1.0000			
lnwages2017	0.2997	0.0006	0.1290	0.0095	0.0766	0.0225	-0.0123	0.0101	1.0000		
lnwages2015	-0.0650	-0.0292	0.0463	0.0124	0.0514	-0.0005	0.0244	0.0225	-0.0241	1.0000	
lnemp2015	0.2658	0.0006	0.1144	0.0081	0.0685	0.0201	-0.0093	0.0101	0.9949	-0.0213	
lnemp2017	0.3089	-0.0014	0.1339	0.0095	0.0796	0.0234	-0.0123	0.0104	0.9912	-0.0237	

V. Frequency distribution

Table 5: frequency distribution tables (a-h)

a) Distribution of the firms in terms of FDI treatment and industry technology intensity

FDI/TREATMENT dummy in 2016	Industry ttecnology intensity				
	Low-tech	Medium lo	Medium hi	High-tech	Total
0	1,869	904	2,432	1,658	6,863
	27.23	13.17	35.44	24.16	100.00
1	2,325	781	1,107	247	4,460
	52.13	17.51	24.82	5.54	100.00
Total	4,194	1,685	3,539	1,905	11,323
	37.04	14.88	31.25	16.82	100.00

likelihood-ratio chi2(3) = 1.2e+03 Pr = 0.000

b) Distribution of the firms in terms of FDI treatment and engagement in Research and Development

FDI/TREATMENT dummy in 2016	R&D dummy in 2017		
	0	1	Total
0	4,274	2,589	6,863
	62.28	37.72	100.00
1	2,436	2,024	4,460
	54.62	45.38	100.00
Total	6,710	4,613	11,323
	59.26	40.74	100.00

likelihood-ratio chi2(1) = 65.4618 Pr = 0.000

c) Distribution of the firms in terms of types of FDI treatment and types of technology intensity

FDI type	Industry ttecnology intensity				
	Low-tech	Medium lo	Medium hi	High-tech	Total
No FDI	1,869	904	2,432	1,658	6,863
	27.23	13.17	35.44	24.16	100.00
Exports-oriented FDI	530	150	220	40	940
	56.38	15.96	23.40	4.26	100.00
Technology intensive	805	290	381	79	1,555
	51.77	18.65	24.50	5.08	100.00
Domestic market seek	990	341	506	128	1,965
	50.38	17.35	25.75	6.51	100.00
Total	4,194	1,685	3,539	1,905	11,323
	37.04	14.88	31.25	16.82	100.00

likelihood-ratio chi2(9) = 1.2e+03 Pr = 0.000

d) Distribution of the firms in terms of types of FDI treatment and engagement in RD.

FDI type	R&D dummy in 2017 0	1	Total
No FDI	4,274	2,589	6,863
	62.28	37.72	100.00
Exports-oriented FDI	548	392	940
	58.30	41.70	100.00
Technology intensive	887	668	1,555
	57.04	42.96	100.00
Domestic market seek	1,001	964	1,965
	50.94	49.06	100.00
Total	6,710	4,613	11,323
	59.26	40.74	100.00

likelihood-ratio chi2(3) = 85.0005 Pr = 0.000

4.2. Econometrics Analysis of Impacts of 2016's FDI Treatment on Firm Level Performance Variables

In this portion of the paper analysis of impacts of binary treatment FDI2016 on firm level variables are presented.

4.2.1. Analysis of Impacts of 2016's FDI Treatment on Employment capability of the firms in 2017, AIPWE

The variables included as outcome dependent, outcome independent, treatment dependent and treatment independent are indicated in the following STATA command. The STATA output is then

```
Treatment-effects estimation                    Number of obs      =     10,527
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: logit
```

lnemp2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDI2016 (1 vs 0)	.1680776	.0212645	7.90	0.000	.1264	.2097553
POmean						
FDI2016 0	11.49331	.0695781	165.19	0.000	11.35694	11.62968

This model is better than the remaining models estimated so far. Hence interpretation is made based on the result from this model. Based on the finding the FDI has significant impact on employment capability of firms. Accordingly, firms that are treated with FDI2016 have about 0.168(16.8%) more employment capability in comparing with non-treated firms. This is statistically significant and based on both SMD and VR criteria good covariate balance is obtained. Summary of covariate balance is available under appendix 1.

Hereafter the econometrics estimation result is presented based on AIPWE and interpretation is made while summary of covariate balance and other statistics are presented under Appendix.

4.2.2. Impacts of 2016's FDI Treatment on Wages the Firms In 2017, AIPWE

```
Treatment-effects estimation                    Number of obs      =     10,527
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: logit
```

lnwages2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDI2016 (1 vs 0)	-.1460846	.0213513	-6.84	0.000	-.1879323	-.1042368
POmean						
FDI2016 0	11.57362	.0698985	165.58	0.000	11.43663	11.71062

The result shows that the impacts of FDI2016 on firms' wage variable is negative. Firms who are treated with FDI have wage payment structure that 14.6% less than those who are not participated in FDI. This follows form economic theory that participation in FDI increases access to cheap labor in foreign market especially if the FDI is targeted toward developing countries. This in turn increases supply of labor which reduces price of labor, wage.

4.2.3 Impacts of 2016's FDI Treatment on Total Factor Productivity of the Firms in 2017, AIPWE

```
Treatment-effects estimation                    Number of obs      =     10,527
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: logit
```

lnTFP2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDI2016 (1 vs 0)	.0658587	.0057678	11.42	0.000	.054554	.0771633
POmean						
FDI2016 0	1.204396	.0067436	178.60	0.000	1.191179	1.217613

As we can see from the above STATA output, the impacts of FDI treatment on total factor productivity of the firms is positive. The ATE shows that on average those who are treated with FDI have 0.0658 (6.5%) more total factor productivity incomparing with non treated group of firms. This follows from economic theory that FDI promotes competetiveness of firms which is explained in improvement of TFP of the inputs of the firms.

4.2.4. Impacts of 2016's FDI treatment on engagement in research and developments of firms in 2017, AIPWE

In this case, the outcome model is logit since the outcome variable RD2017 is binary variable.

```
Treatment-effects estimation                    Number of obs      =     10,527
Estimator      : augmented IPW
Outcome model  : logit by ML
Treatment model: logit
```

RD2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDI2016 (1 vs 0)	.0725223	.0109171	6.64	0.000	.0511253	.0939194
POmean						
FDI2016 0	.3765678	.0066971	56.23	0.000	.3634418	.3896937

The FDI treatment has also positive impacts on probability of engagement in Research and development activities of firms. The ATE shows that those firms who are treated with FDI in 2016 have 7.3% more probability to invest in research and development activities.

4.3. Impacts of different types of FDI treatment in 2016 on firm level variables

In this section I estimated the impacts of FDI 2016 by type on basic firm level performance variables. In comparing with firms with No FDI treatment, the three types of FDI treatment considered are: Export oriented FDI, technology intensive FDI and domestic market seeking FDI.

4.3.1. Impacts of different types of FDI treatment in 2016 on employment of the firms in 2017

```
Treatment-effects estimation                    Number of obs      =     10,527
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: (multinomial) logit
```

lnemp2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDITYPE2016 (Exports-oriented FDI vs No FDI)	.1327325	.0375813	3.53	0.000	.0590745	.2063904
(Technology intensive FDI vs No FDI)	.1925647	.0318422	6.05	0.000	.1301552	.2549743
(Domestic market seeking FDI vs No FDI)	.1686893	.0291769	5.78	0.000	.1115037	.225875
POmean						
FDITYPE2016 No FDI	11.49342	.0695787	165.19	0.000	11.35705	11.6298

The ATE shows, in comparing with No FDI treatment, firms which are treated with export-oriented FDI have 0.1327 (13.27%) more capable of generating employment opportunities. Technology intensive FDI treatment have highest employment generating capabilities which is 0.1925 (19.25%) more while

employment opportunities of those who are treated with domestic market seeking FDI is 0.168 (16.86%) more in comparing with non-treated firms.

4.3.2. Impacts of different types of FDI treatment in 2016 on wages of the firms in 2017

```
Treatment-effects estimation                Number of obs     =     10,527
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: (multinomial) logit
```

lnwages2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDITYPE2016						
(Exports-oriented FDI vs No FDI)	-.1123584	.0378672	-2.97	0.003	-.1865768	-.0381401
(Technology intensive FDI vs No FDI)	-.1664868	.0319136	-5.22	0.000	-.2290364	-.1039372
(Domestic market seeking FDI vs No FDI)	-.1485977	.02937	-5.06	0.000	-.2061618	-.0910337
POmean						
FDITYPE2016						
No FDI	11.57351	.0698973	165.58	0.000	11.43652	11.71051

The impacts of FDI treatment on wage is negative and the impacts of export oriented FDI on wage is -0.1123 (11.23% less) that of technology intensity FDI on wage is -0.148 (14.8% less) and that of domestic seeking FDI on wage is -0.1664 (16.64% less). The negative of FDI impacts on wage is higher in the case of firms treated with technology intensive FDI in comparing with the impacts of other types of FDI treatment.

4.3.3. Impacts of different types of treatment of FDI 2016 on total productivity of the firms in 2017

```
Treatment-effects estimation                Number of obs     =     10,527
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: (multinomial) logit
```

lnTFP2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDITYPE2016						
(Exports-oriented FDI vs No FDI)	.0921154	.0129133	7.13	0.000	.0668058	.1174251
(Technology intensive FDI vs No FDI)	.0558162	.009569	5.83	0.000	.0370614	.0745711
(Domestic market seeking FDI vs No FDI)	.0655482	.0089522	7.32	0.000	.0480022	.0830943
POmean						
FDITYPE2016						
No FDI	1.204469	.0067479	178.49	0.000	1.191244	1.217695

Incomparing with non-treated firms, the TFP of firms which are treated with Export oriented FDI is 0.0921 (9.21%) more higher. Similarly incomparing with non-treated firms, TFP of firms treated with technology intensity FDI and domestic market seeking FDI are 0.0558(5.58%) and 0.065(6.5%) more

higher respectiely. The among types FDI treatment export oriented FDI treatment has higher positive impact on TFP of the firms.

4.3.4. Impacts of different types of FDI treatment in 2016 on engagement in research and development of the firms in 2017

Treatment-effects estimation Number of obs = 10,527
Estimator : augmented IPW
Outcome model : linear by ML
Treatment model: (multinomial) logit

RD2017	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
FDITYPE2016						
(Exports-oriented FDI vs No FDI)	.0596345	.0190542	3.13	0.002	.0222891	.09698
(Technology intensive FDI vs No FDI)	.0674748	.0157481	4.28	0.000	.0366091	.0983404
(Domestic market seeking FDI vs No FDI)	.0805664	.0148927	5.41	0.000	.0513771	.1097556
POmean						
FDITYPE2016						
No FDI	.3765714	.0067077	56.14	0.000	.3634245	.3897183

Among the three different types FDI treatment, domestic market seeking FDI have higher impacts on decision of the firms in engagement in research and development activities. Incomparing with non-treated groups of firms, those firms which are treated with domestic market seeking FDI have 0.0805 (8.05%) more probability to engage in research and development activities.

5. CONCLUSION AND RECOMMENDATION

This project paper studied the impacts of direct foreign investment on the performance of firms with AIPW model. Four main performance variables included in the study are employment, wages, total factor productivity and research and development. The treatment variable is FDI 2016. The paper also explores impacts of various types of FDI treatments. Several descriptive statistics are computed to visualize the relationship between the treatment variable and the performance variables. Econometrics techniques, AIPWE is also applied to analyze the average treatment effects. The results from the study suggests that the FDI is key variable and has important impacts on firm level performance variables. Based the study FDI has positive impact on employment variable of the firms and technology intensive FDI are the one which should be given emphasis in order to increase employment capability of the firms. Similarly, FDI has positive impact on total factor productivity of the firms and the domestic market seeking FDI type is the one which has higher impact in promoting total factor productivity the resources of the firms. Also, the result from the study suggests that FDI has positive impact on initiating research and development activities. Accordingly, the domestic market seeking and technology intensive FDI are among types of FDI which should be promoted in order to boost impacts of FDI on research and development activities.

However, the findings of the study shows that FDI treatment has negative impacts on wages of the firms among which technology intensive FDI highly affects the wages. The policy makers should focus on the way to reduce the negative impacts of FDI on wages.

One of the limitations of this study it is conducted based up cross sectional data of only two years. Any

upcoming researchers should fill this gap with employment of panel data or cross-sectional data in order to rigorously study the firm level impacts of FDI overtime. Again, because of limited time, data and resource, the paper includes four outcome variables; employment, wage, TFP and RD. That is there are outcome variables whose impacts of FDI on them are not studied in this paper. Upcoming researchers can fill this gap and study the impacts of FDI on firm level performance by including additional outcome variables like export intensity, return on capital and technical efficiency of the firms.

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Determinant Factors on using Food Label Information and its role on Purchase Decision of Fruit Juice Products: A Evidence from Gondar City Consumers

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Abstract

The purpose of this study is to identify the determinant factors that affect the role of food labels on consumers' purchase decisions. A cross-sectional quantitative research method was employed, using convenience sampling to select participants buying fruit juices in supermarkets in Gondar City, where a wide range of packed fruit juice foods are available for sale. The results of the study indicate that label attributes are the most significant factor influencing the role of food labels on consumers' purchase decisions. Additionally, the perception of a label at the point of purchase, prior knowledge/experience, and perceived risk were found to be important determinants in affecting the role of labels on consumers' purchase decisions. This study contributes to the existing literature by shedding light on the determinant factors that influence the role of food labels in consumers' purchase decisions, specifically in the context of fruit juice products in Gondar City. The study combines the correlation and multiple linear regression which was lacking from previous studies. The study recommends that manufacturers and distributors improve their label attributes, such as languages and technical terms, to make them easier to understand for consumers and increase the effectiveness of labels on purchase decisions.

Keywords: Label attributes, Perceived risks, Label Perception, fruit juice products

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1. Introduction

Natural food is being gradually supplanted by conventional food nowadays due to the rise in living standards. Customers' concerns about their general health and well-being have grown as a result (Parashar, Singh & Sood, 2023; Dickson, 1994). The increasing industrialization of food production in the nineteenth century increased customer dependency on food labels as a fundamental source of information while making purchases, as stated by the Food Labeling Regulation (2001).

Nowadays, the food company has taken the lead in advancing modern food labeling as a result of improvements in food science, dietary choices, and quantity of consumption, all of which have been identified to be key components of public health. Consequently, the World Health Organization, also known as WHO, has initiated a global effort to motivate consumers to embrace healthy living practices. Even though manufacturers attached nutrition facts on products, it is imperative to assess consumers' knowledge of this information, and their readiness to read and use it as a guide when making decisions about what food type to buy which is affected by different factors (Darkwa, 2014). Addressing these factors affecting the role of food label information on consumers purchase decision is very important for companies, policy makers and governmental bodies to open a campaign for creating awareness about the importance of food label information among consumers. On the other hand, there are many reports related to retailing outdated and fake foods in different parts of Ethiopia, revealed in Mass Medias that can highly affect the health of consumers. For instance, the report of Gondar City trade and industry department shows that, outdated food is available in the market with a fake label information and consumers are not understanding and using this information. The report of Gondar City trade & industry department report (2008, 2009, and 2010) reveals, the office has got outdated food and take a measure on 1024-liter fruit juices and 151 kg packed food in 20016 and 1082 liter fruit juices 629 kg food in 20017. In two quarters of 2018 budget year 585.2-liter fruit juices and 87 kg food has been collected and avoided to protect the well-being of the consumers. According to this information, the situation is seems getting sever and every customer should check label information to stay health.

Research on food label and consumers have gained attention in recent years and many researchers had carried out study on food label awareness, knowledge, understanding, use and the impact of the information in buying decisions mostly in different ways (Jacobs, Beer & Larney, 2010; Jeddi, 2010; Azman & Sahak, 2013; Vemula, Gavaravarapu, Vardhana, Mendu, Mathur & Avula, 2013; Darkwa 2014; Javeed, Mokhtar, Othman & Khan, 2015; Miller, 2015; Mhurchu,Volkova, Jiang, Eyles, Michie, Neal, Blakely, Swinburn & Rayner, 2017).

A study by Darkwa (2014) argues that awareness and knowledge of food labelling may not always adequately impact on food choices. Nevertheless, food labels are a useful source of information through which consumers' food choices are shaped and it have a varying impact on food choices.

Jacobs et al. (2011) also showed that, respondents usually read food labels, however the benefit they get from labeling information is not that much maximized the benefits to be gained from reading food labels.

Azman and Sahak (2013) also conclude that, the role of nutritional label in influencing the healthier food choice is high and Miller (2015), also suggests that, when individuals use food labels, they may be incorporating intentions to eat healthier foods in their rating and this may offer an opportunity for food

labels to play a vital role in closing the gap between intention and consumption.

Therefore, scholars have no clear agreement on the role of labeling information on consumer's purchase decision which needs to be assessed more in various studies and factors that are affecting the role of food label information on consumers purchase decision are not sufficiently addressed. There is also a very limited research and theoretical evidence regarding food labeling and the factors affecting the role of food labels on buying decision of consumers in Ethiopian context. The only published study carried out in food labeling area in Ethiopia, for instance (Imiru, 2017) deals on the Effect of Packaging Attributes on Consumer Buying Decision Behavior in Major Commercial Cities in Ethiopia. As a result, factors affecting the role of food label information on purchase decision of consumers' have not been fully understood in Ethiopia and published research regarding this issue are scarce and therefore this study is aimed to fill these gaps. For instance, the few papers published on food labelling in Ethiopia context focused on Addis Ababa being a commercial and cultural hub (Feyisa, Wondimu & Kaba, 2021; Kokobe, Marew & Fenta, 2021). More comprehensive studies are needed to understand the role of food labels in influencing consumer behaviour across different regions of Ethiopia, isolate food labelling as a variable, and investigate its specific impact on consumer purchase decisions, distinct from broader packaging attributes. Also, there is a need to include other regions and cities in Ethiopia, such as Gondar, which have significant commercial potential but are currently underrepresented in the literature. There is an urgent need for more empirical studies and theoretical frameworks that can inform policymakers, businesses, and consumers about the importance and impact of food labelling. Studies are needed to assess the effectiveness of current labelling regulations and to provide recommendations for policy improvements that could enhance consumer protection and information to fill the existing gaps in the literature. Addressing these research gaps will contribute to the academic literature and provide practical insights for improving food labelling practices in Ethiopia. This study could better inform consumers, enhance public health outcomes, and create more effective regulatory policies. Future studies should focus on these identified gaps to develop a comprehensive understanding of the role of food labelling in consumer buying decisions within the diverse Ethiopian context. have dearth of literature on Food labels.

This study continues with literature review, methodology, results, discussion, theoretical, managerial contributions, study limitation and future study and conclude with the highlights of the study. The method used multiple linear regression to identify the most significant factor affecting purchase decision.

1.1 Food Labels and the Consumer Decision Making Process

Many studies have been published in recent years about the effect of time pressure on consumers' purchase decisions and the subsequent effect on households' food and grocery purchases (Jacobs et al, 2010). Due to plenty of product information available on the spot when food products are purchased, consumers generally spend limited time to search for product information and to make purchase decisions which are generally regarded as less complex than other product decisions (Adamowicz & Swait, 2011). Most food products are chosen routinely by selecting for familiar brands without necessarily attending to other product information irrespective of whether the information is printed on the packaging itself (Adamowicz & Swait, 2011).

A food purchase may become a high participation purchase (Kuvykaite, 2009) when a product is purchased for the first time (Peters-Texeira & Badrie, 2005) and purchased for someone else who might

have special dietary requirements due to health concerns. In such cases consumers inevitably must rely on packaging cues like size, materials used, color and information on food labels (Kole et al, 2009).

Literature shows that a consumer who evaluates products carefully according to predetermined criteria follows a rational decision-making process which is based on objectively selected product attributes that would best satisfy their needs (Schiffman & Kanuk, 2010). And food label information is an essential external stimulus for those who follow a sensible decision-making process and who need to make knowledgeable decisions (Bosman et al, 2015). Inadequate attention is dedicated in literature to the fact that even in terms of food purchases, which is regarded as less routine purchase decisions, consumers subconsciously proceed through stages of problem-solving activities. Because mostly, food products are chosen from a range of alternatives which some may even be harmful if consumers fail to notice the product content (Bosman et al, 2015).

1.2 Factors affecting the Role of Food Label Information on Purchase Decision

Various factors influence the extent to which consumers are aware of, perceive a need for, and utilize food labelling based on the existing literature. These factors encompass consumers' initial perception of a label at the point of purchase, their perception of associated risks when purchasing food products, their prior knowledge and experience regarding the use of labels, and the attributes of both the product itself and the labelling information provided.

Perception of a label: Consumers' perception is the process in which sensory stimuli are selected, categorized, and interpreted, and depends on a consumer's senses (Schiffman & Kanuk, 2010). Few studies have been conducted in different countries on the perception and use of packaged food labelling in decision making during purchase of packaged foods. In South Africa, Jacobs et al, (2010) observed that consumers have different motivations and perception in searching for and using information on food labels. Grunert, (2001), also have shown that the perception of a label as a source of information for the consumer differs according to the family and the category of the product, that means the perception of the quality's signal depends on the degree of implication of the product.

Perceived Risk: Most of the research on the consumer's behavior has deeply investigated the role of the perceived risk in the decision-making process of the consumer in a purchasing situation. According to Larceneux (2004), consumers depend on the label information to decrease the perceived risk, as the label enables them to deal with unfamiliar products and avoid any undesirable health consequences. When facing a strong suggestion of a product and feeling a high perceived risk, then consumers increase their search of information by depend on the product's label information (Grunert, 2001).

Experience/ prior Knowledge: According to Ericsson & Kintsch (1995) consumer's knowledge plays a role on the usage of nutritional labels in different ways. Having previous knowledge or experience enables consumers to focus on the important cues given in the form of information and ignore other marketing stimuli. This process helps consumers to comprehend the food packaging cues and labels and could help in the application of the knowledge in making food choices (Charnes et al., 2001). Cooke & Papadaki (2014) also found a positive association between nutritional knowledge and food label usage.

Labeling Attributes: The underlying principles of how product information is presented, is also not necessarily clear to consumers that ingredients are listed in a descending order in terms of quantities or in other means (McEachern & Warnaby, 2008). Consumers may become highly frustrated if information

which they expect to find on products is absent such as expiry dates, information about food allergens and country of origin and when the weight and content on imported foods are indicated in imperial instead of metric units (De Magistris & Gracia, 2008) and if they are not familiar with the symbols and vocabulary that is used (Mannel et al, 2006). Too much information, on the other hand, could result in an information overload (Kimura et al, 2008), which creates a strong controversy in terms of what needs to be included to satisfy all consumers (Feunekes et al, 2008). In essence, food choices are significantly prejudiced if consumers are unable to understand label information (Jacobs et al, 2010), because consumers then typically ignore the information or might even discard the product in favor of alternative which the label information seems clearer and more useful (Silayoi & Speece, 2004).

Product Attributes: According to Aaker et al. (1992) product attribute is the characteristics of products through which products are identified and differentiated which can offers an important benefit towards the satisfaction of consumer needs.

Product attributes provide the benefits consumers seek for purchasing a product and consumers, therefore, should focus their energy and attention on product attributes that are most important and relevant when deciding which brand to purchase and this in turn can replace the role of label information (Akpoyomare, 2012).

1.3 Hypothesis and conceptual framework

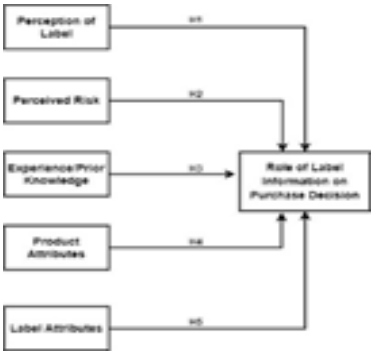
H1: There is significant and positive relationship between the perception of a label and the role of labels in purchasing decisions of Gondar City consumers.

H2: There is significant and positive relationship between the perceived risk, and the role of food label information on purchase decision of Gondar City consumers.

H3: There is significant and positive relationship between consumers experience/ prior knowledge and the role of food labels on purchase decision among Gondar City consumers.

H4: There is significant and positive relationship between product attributes and the role of the label information on the consumer's purchase decision in Gondar City.

H5: There is significant and positive relationship between labeling attributes and role of food labels on consumers purchase decision in Gondar City.



Source: - adapted from Jeddi & Zaiem (2010)

Figure 1. Conceptual framework of the study

2. Methods and Materials

The target populations for this study were residents of Gondar City who buy fruit juice products for consumption and who are eighteen years and above. Random selection was used to get 8 out of the 23 registered supermarkets in Gondar City for inclusion in the study. The selected supermarkets for this study were Ras Dashen supermarket, Best supermarket, Yodaye supermarket, Blue super market, Chalie supermarket, MBSS super market, Seni super market and Helen super market. Respondents were selected using convenient sampling method because of unavailability of sampling frame due to the nature of the study population and site.

This study is delimited to consumers of Gondar City fruit juice products and the variables are delimited to perception of a label at point of purchase, perceived risks, consumers' experience/prior knowledge, product attributes and label attributes. Methodologically, this study is delimited to survey and covers both manufactured domestically and international brands of fruit juice products.

Out of the 400 distributed questionnaires, 33 of them was incomplete and inappropriately filled. Therefore, all returned incomplete and inappropriately filled questionnaires were considered as inconsistent and removed from the survey data. As a result, a total of 367 complete questionnaires were used which represents a 91.75% response rate.

Correlation analysis was used to describe the strength and direction of the linear relationship between two variables (perception of a label, perceived risk, socio-demographic characteristics, product attributes, labeling attributes, experience/prior knowledge) and dependent variable (the role of food labeling information on purchase decision) (Malhotra, 2015). Regression analysis was also used to identify the predicting power value of independent variables.

3. Result and Discussion

3.1 Demographic profile of the respondents

Among the participants of this study, 56.7 % of them are males and the rest 43.3% are females. Based on the marital status of the respondents, most of them 186 (50.7%) are non-married and 175 (47.7%) are married. Based on this, the age group of 26-35 (55.9%) covers the largest portion followed by the age group of 18-25 (22.3%) and 36-45 (12.5%). Degree holders among the respondents covers the largest portion by counting 149(40.6%) followed by 117 (31.9%) College Diploma holder respondents, 19 (5.2%) respondents hold master's and above educational levels. In case of occupation of the respondents, majority of them 131 (35.7%) are private business owners followed by 125 (34.1%), 82 (22.3%) government employee and private company employee respectively.

Table 1: Profile of participants

No		Frequency	Percent (%)
1	Gender of the respondents		
	Female	159	43.3
	Male	208	56.7

2	Age of the respondents		
	18-25	82	22.3
	26-35	205	55.9
	36-45	46	12.5
	46-55	28	7.6
	>56	6	1.6
3	Educational levels of the respondents		
	Primary education	20	5.4
	Secondary education	62	16.9
	College Diploma	117	31.9
	university/ Bachelor	149	40.6
	Masters and above	19	5.2
4	Occupation of the respondents		
	Student	15	4.1
	Government employee	125	34.1
	Private Business	131	35.7
	agricultural related	7	1.9
	private company employee	82	22.3
	Unemployed	7	1.9

3.2 Association between determinant factors and role of labels

To measure the degree of the relationships between label impact on purchase decision and factors affecting it, Pearson's correlation analysis was used. Table 2 clearly indicates that each variable are significantly correlated at significance level of $P<0.01$. Based on this, all independent variables measuring factors affecting the impact of food labels are positively related with the dependent variable with the range of (.218) to (0.454) and all were significant at $p<0.01$.

Table 2: Association between Variables

	Perception of a label	Perceived risk	Experience/ prior knowledge	Product attributes	Label attributes	Label impact
Perception of a label	1	.339**	.281**	.318**	.380**	.332**
Perceived risk	.339	1	.218**	.224**	.297**	.245**
Experience/prior knowledge	.281	.218	1	.385**	.356**	.224**
Product attributes	318	.224	.385	1	.376**	.218**
Label attributes	.380	.297	.356	.376	1	.454**
Label impact	.332	.245	.224	.218	.454	1

Note. **p** < .01. This table presents the correlation matrix of six key variables, indicating the

relationships between them with significance levels denoted by asterisks.

Field, (2009) has suggested to demarcate correlations that, from 0.1 to 0.3 as weak, 0.3 to 0.5 as moderate and above 0.5 is strong. Based on this, among all five explanatory variables which affects the role of food labels on consumers purchase decision; Experience/prior knowledge (0.224), Product attributes (0.218), Perceived risk (0.245) show a weak positive relationship with the role of labels on purchase decision of consumers. Perception of a label (0.332) and Label attributes (0.454) shows moderate relationship with the dependent variable.

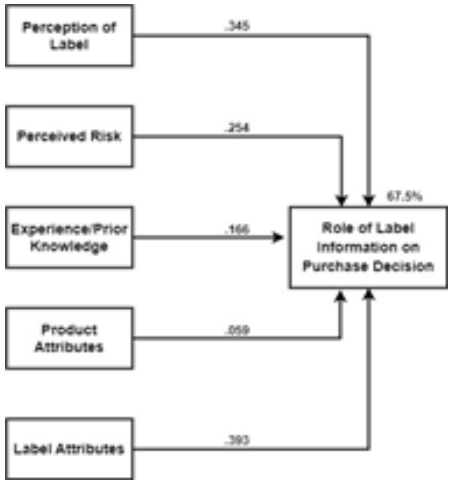


Figure 2. Conceptual framework and the tested hypotheses

3.3 The Effect of Determinant Factors on the Role of Label Information

All assumptions have been tested before regression analysis and the data have satisfied the normality tests.

The model coefficient of determination (Adjusted R Square) indicates that 67.5% of the variation in the measurement (label role) can be explained by the independent variables (Perception of a label, Perceived risk, Experience/prior knowledge, Product attributes, and Label attributes).

Table 3: Model Summary

Model	R	R Squareb	Adjusted R Square	Std. Error of the Estimate
1	.824a	.680	.675	.12883

The regression analysis of standardized coefficients of Beta and Sig values for all independent variables of the study has been revealed (see Table 4). Perception of a label with a Beta value of (0.345) and sig of (0.001), Perceived risk with a Beta of (0.254) and sig value (0.001), Experience/prior knowledge a Beta value of (.166) and a sig value of (0.001) and label attributes score a Beta value of (0.393) and a sig value of (0.001). This shows that, there is a significant relationship between independent variables and dependent variable (label role) stated on the study. Based on this result, hypotheses related with Perception of a label, Perceived risk, Experience/prior knowledge, and label attributes are accepted as the predictor variables since statistically they are significant at less than 0.05. But, product attributes are not significantly contributing in affecting the role of labels on the purchase decision of consumers in case

of fruit juices and the hypothesis is not supported.

Table 4: Regression Analysis for label role

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(constant)	1.660	.102		16.336	.001
1	Perception of a label	.157	.016	.345	9.952	.001
	Perceived risk	.151	.018	.254	8.319	.001
	Experience/prior knowledge	.101	.020	.166	5.091	.001
	Product attributes	.033	.018	.059	1.842	.066
	Label attributes	.184	.017	.393	10.839	.001

a. Dependent Variable: label role

b. Predictors: (Constant), Label attributes, Product attributes, Experience/prior knowledge, Perceived risk, Perception of a label

Hypothesis Testing

Table 5: Summary of Overall Research Hypothesis

Hypotheses	Result	Reason
H1: There is significant and positive relationship between the perception of a label and the role of labels in purchasing decisions of Gondar City consumers.	Accepted	β=0.345 P<0.05.
H2: There is significant and positive relationship between the perceived risk, and the impact of food role information on purchase decision of Gondar City consumers.	Accepted	β=0.254 P<0.05.
H3: There is significant and positive relationship between consumers experience/ prior knowledge and the role of food labels on purchase decision among Gondar City consumers.	Accepted	β=0.166 P<0.05.
H4: There is significant and positive relationship between product attributes and the role of the label information on the consumer's purchase decision in Gondar City.	Rejected	β=0.069 P > 0.05
H5: There is significant and positive relationship between labeling attributes and the role of food labels on consumers purchase decision in Gondar City.	Accepted	β=0.393 P<0.05.

In Figure 1, 2 and Table 5, label attributes are the first determinant factor with the value of 0.393, p-value of 0.001. This finding is supported by (Vemula, 2014; Doyle et al, 2005; Dimara & Skuras, 2005; Worsley & Lea, 2008; Texeira & Badrie, 2005; McEachern & Warnaby, 2008; De Magistris & Gracia,

2008; Mannel et al, 2006), Labeling attributes has a great impact on consumers purchase decision of food products by reading labels. Perception of a label is the second factor with the value of 0.345, p-value of 0.001. And supported by (Jacobs et al, 2010; Donna et al, 2001; Grunert, (2001), perceived risk is the third factor with value of 0.254 and p- 0.001. Supported by (Larceneux, 2004; Grunert, 2001 ;) that, consumer relies on the label to reduce the perceived risk. Therefore, perceived risk has proved to be an unquestionable key factor which determines and affects the impact of labels on the consumer's their purchase. Experience/prior knowledge is the third factor with the value of 0.166, p-value of 0.001. This finding is supported by (Hess et al., 2012; Cooke & Papadaki, 2014) and Javeed, 2017) that, consumer knowledge and experience provides support to food label usage. Product attributes is not a significant factor with a sig value of .066 which is greater than the cut off p-value of 0.001. This finding is also supported by Akpoyomare (2012) and suggested that, consumers should focus their energy and attention on product attributes that are most important and relevant when deciding which brand to purchase. But if it is routine the product attribute may not have significant contribution on their purchase decision. Therefore, the contribution of product attributes on the role of labels is not significant for Gondar city consumers due to their experience and absence of varieties of fruit juice brands in the market.

Theoretical Contribution

The study makes a significant theoretical contribution by shedding light on the determinant factors influencing the role of food labels in consumers' purchase decisions, particularly in the context of fruit juice products in Gondar City. The theoretical framework presented in the study provides a structured understanding of the factors affecting consumers' reliance on food labels at the point of purchase. Identifying label attributes, perception of a label, perceived risk, and experience/prior knowledge about labels as key determinants contributes to the existing literature on consumer behavior and decision-making processes (Naim, 2023).

The study extends the theoretical understanding by assigning weights to each determinant factor based on empirical evidence. This nuanced approach helps researchers and practitioners to prioritize their focus when developing strategies to enhance the effectiveness of food labels. The finding that label attributes hold the highest significance in influencing consumer decisions underscores the importance of clear and comprehensible information on product packaging.

Furthermore, the study contributes to the theoretical foundation by explicitly stating that product attributes do not have a significant relationship with the impact of food labels on consumers' purchase decisions. This insight challenges conventional assumptions and encourages a more nuanced perspective on the role of different product-related factors in consumer decision-making, specifically in the context of food labels. This study differed from the earlier study that discovered "personal characteristics", "situational factors such as attitudes and behaviors", "product class engagement", "nutrition knowledge" as the factors that influence the use of food labels (Naim, 2023).Managerial Contribution

From a managerial standpoint, the study offers practical insights that can guide manufacturers and distributors in optimizing their food labels to influence consumer purchase decisions positively. Identifying label attributes, perception of a label, perceived risk, and experience/prior knowledge as the primary determinants allows stakeholders to tailor their marketing and communication strategies accordingly.

The managerial implications include a recommendation to improve label attributes, such as language and technical terms, to enhance consumer understanding. This advice aligns with the broader trend in the industry towards transparent and consumer-friendly communication on product packaging. Manufacturers and distributors can use this information to invest in consumer education programs or refine their label designs to align with consumer expectations.

Moreover, the study's emphasis on label attributes suggests that investing in clear and informative packaging can be a crucial driver for influencing consumer decisions. Manufacturers may consider incorporating user-friendly language, avoiding jargon, and providing comprehensive information about the product to maximize the impact of food labels on consumers.

This study provides actionable insights for managers and policymakers to enhance the effectiveness of food labels, ultimately influencing consumer purchase decisions positively. The findings contribute not only to academic literature but also offer practical guidance for stakeholders in the food industry seeking to improve their product communication strategies.

Further, label attributes are the most determinant factor. So, manufacturers should adapt and modify label attributes by improving the font size, complicated and technical way of presentation, by using attractive display and using customized languages which can make labels easy for consumers to understand and use them and will improve the role of labels on consumers purchase decision. In turn companies can get comparative advantage to be differentiable among the product categories. Perception of a label is among determinant factors, affecting the role of food labels on consumers purchase decision. And need a joint effort by manufacturers for sake of themselves and governmental bodies to protect the people from health risks emanates from using outdated fruit juices by creating awareness about the usage of label. But, whatever it needs, consumers should get informed to perceive labels while they purchase juice products by using integrated marketing communications. To increase the use of labels in the appropriate way, governmental bodies can warn consumers not to use labels without reading by using different promotional activities. Manufacturers also should create warnings about fake products with similar appearances so that consumers can read labels to reduce health risks, buying fake and high copy products. A joint campaign also should be done to increase the experience/ knowledge of consumers about labels. Firstly, consumers by themselves should increase their knowledge by using any opportunity to make them safe from risks of using fruit juice products. Secondly, manufacturers should engage in improving the knowledge of consumers about their product label features. Thirdly, governmental, and other responsible bodies should engage themselves to increase consumers experience and knowledge about labels to protect them from different risks. Moreover, most juice brands are, exported from outside labeling with non-Ethiopian languages. Therefore, Ethiopian food, beverage medicine quality and standard authority and other governmental bodies should primarily assure the quality and standard of imported fruit juice products. Consumer’s protection core work process found in trade and industry sector of Gondar City should also scan supermarkets and retail shops frequently to reduce fake and outdated fruit juice products which may harm health of consumers. Also, combination regression analysis is the methodological strength of this study.

4. Conclusions and Recommendations

The aim of this study is to assess determinant factors affecting the role of food labels on consumers purchase decision. Based on the finding of the study, Label attributes was found to be the first significant

explanatory variable that influences the role of food labels on consumers purchase decision with a value of (0. 393) followed by Perception of a label (0.345), Perceived risk (0.254) and Experience/ prior knowledge (0.166) which indicates that these variables have an influence on the role of labels in communicating consumers at point of purchase. However, there was not a relationship between products attributes and role of labels on consumers purchase decision. Therefore, Manufacturers should revise their product attributes to attract consumers in their purchase decision.

Limitation and Future Research

It focuses only on Gondar City consumers and future research works can focus on at regional or national level consumers. Literature suggests that there are more variables affecting the role of food labels on purchase decision. Therefore, other researchers can conduct their study by using more and other variables. Moreover, other researchers can conduct study by employing sophisticated analyzing models like Structural Equation Modelling, Neural Networks, Necessary Condition Analysis, Importance, Performance Analysis and Multigroup Analysis.

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