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EDITORIAL

The Editor-in-Chief and the Editorial Board are proud to present the first issue of the second volume of Focus on Research in Contemporary Economics (FORCE). We are driven to establish FORCE which is dedicated to create a well- established venue for high quality research in contemporary Economics. Its content mirrors widespread scholarly approaches and interests within the dimensions of Economics, Finance, Accounting, Banking, Business Administration, Marketing, Management, and other related areas in Social Sciences. Therefore, FORCE's contributions are not limited to a specific disciplinary philosophy or a particular approach.

This issue features four research articles, and a book review that report essential findings and implications in Contemporary Economics. In the first article, Dubihlela, Chakabva and Tengeh (2021) investigate the risk management practices of FMCG SMEs in the Cape Town Metropolitan Area in an attempt to fill the knowledge gap on risk management and sustainability of SMEs.

In the second article, Boukraine (2021) analyzes Tunisia's exchange rate pass-through to inflation on quarterly data from 2011Q4 to 2019Q4. It is reported the exchange rate pass-through to inflation is high but slightly declines by switching from the first to the second regime when external debt reaches a certain threshold level, what rises concern is the rise in its volatility when the switch occurs.

In the third article, Topcu Guloksuz (2021) revisits the practicability of geometric Brownian motion to modelling of stock prices. Random walk process is extended to the geometric Brownian motion model and its mathematical properties are discussed. The results display that the geometric Brownian motion model provides accurate predictions.

In the fourth article, Kara and Yücekaya (2021) determine the mediating role of job satisfaction in the effect of perceived organizational support on organizational commitment. The results display that perceived organizational support positively affects organizational commitment, and job satisfaction has a full mediating effect between perceived organizational support and organizational commitment.

FORCE also aims to provide conceptual considerations, and a broad understanding of the literary criticisms; thus, book reviews are entailed. Doganyilmaz Duman (2021) provides a descriptive and a critical review regarding Francis Fukuyama's (2018) latest book entitled "Identity: The Demand for Dignity and the Politics of Resentment".

I would like to thank our authors, reviewers, and readers for their continuous support.

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FORCE
FOCUS ON RESEARCH IN CONTEMPORARY ECONOMICS

A RISK MANAGEMENT FRAMEWORK FOR FAST MOVING CONSUMER GOODS RETAILERS IN SOUTH AFRICA

Job Dubihlela, Oscar Chakabva, & Robertson Tengeh

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A RISK MANAGEMENT FRAMEWORK FOR FAST MOVING CONSUMER GOODS RETAILERS IN SOUTH AFRICA

Job Dubihlela*, Oscar Chakabva, & Robertson Tengeh

ABSTRACT

This paper investigated the risk management practices of FMCG SMEs in the Cape Metropolitan Area in an attempt to fill the knowledge gap on risk management and sustainability of SMEs. This study used a mixed methods approach. The data from 320 SME owners and managers operating in the FMCG sector of the Cape Metropolitan Area were collected through a standard questionnaire. In order to validate the quantitative data gathered through a questionnaire-tool, qualitative data were collected by interviewing two risk experts. The findings revealed that FMCG SMEs have risk management mechanisms in place, but they are too simplistic and very informal. Even so, it was noted major that SMEs that existed for ten or fewer years tend to lack the crucial elements of a useful risk management tool kit as dictated by best practice. Aligned to this was the lack of budgetary control and contingency fund account in SMEs, lack of risk knowledge, and so forth. As such, this paper proposes a practical risk management frame that is aligned with the needs of FMCGs. The framework presented in this article is anticipated to serve as a practical risk management tool for use by SMEs since it was informed by the empirical results and best practice, as documented in the literature. This paper contributes to the risk management literature in the FMCG SME sector. In addition, this is a pioneering empirical study to investigate the existence of the crucial elements of a useful risk management tool kit in FMCG SMEs, as dictated by best practice.

KEY WORDS: *Risks, Risk Management, FMCG SMEs, Framework, Sustainability, South Africa*

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1. INTRODUCTION

The high failure rate of small and medium enterprises (SMEs) is a global problem, and recent studies have shown that the failure rate ranges from 70% to 90%, depending on a country and industry (Kaminskaite, 2017:3). According

to the Organisation for Economic Cooperation and Development (OECD) (2017), the number of SMEs in Japan dropped by 21% between the years 1999 and 2014, while the average death rate for SMEs in United Kingdom (UK) stood at 9% during the year 2015 (Rhodes, 2016:9). Also, about 50% of SMEs in the United States of America (USA) fail within 5years (Dubihlela & Nqala 2017).

SMEs in Africa are also being bedeviled by many factors militating against their performance, which results in a high SME failure rate. The failure rate of SMEs in Africa is relatively higher, with 50% of the new SMEs failing within the first 3years while 95% fail within the first 4years (Mungal & Garbharran, 2014:77). For example, 60% of SMEs in Zimbabwe fail within their first year of operating, 25% fail within their first 3years, and the remaining 15% are likely to continue to exist (Nyamwanza, Paketh, Makaza & Moyo, 2016:305). Furthermore, the rate of failure of SMEs in Uganda is alarming, with one-third of new SMEs not going beyond their first year of operation.

In South Africa, the government has called upon several organizations to support SMEs through various initiatives like subsidized credit programs and loan guarantees. Organizations are helping SMEs include among other, the Nations Trust and Micro Enterprises which provides loans of a maximum of R20 000 to black South Africans between the ages of 18 and 35, and the Small Enterprise Finance Agency (SEFA) which provides financial support to owner-managed enterprises to promote their survival and growth (Khan, 2014). Despite the direct and indirect government support, SMEs are still struggling to survive. Thus, the percentage of South African SMEs which fail within the first five years ranges between 50% and 95% (Mong, 2012:33-34), and nearly 75% of new SMEs fail to become established enterprises, which has been regarded as one of the highest failure rates in the world (Yeboah, 2015:4). As a result, South Africa is losing millions of rands and job opportunities due to the high failure rate of SMEs (GEM, 2011).

Many studies have examined the perceived reasons why SMEs fail to achieve continued existence (Islam & Tedford, 2012:3; Pyeman, Rashid, Hanif, Mohamad & Tan, 2015:247; Kaminskaite, 2017:11; Smit & Watkins 2012:6325).

Based on these studies, one chronic factor which was pointed continuously out as probably the most significant reason why SMEs fail to achieve survival is the

accumulation of risks due to lack of appropriate management skills, including risk management skills. To test these perceptions, this paper seeks to investigate the risk management practices of SMEs which sell fast-moving consumer goods in the Cape Metropolitan Area in order to determine if they are better positioned to manage risks or not.

Preceding the first section in this paper, the introduction, a literature review of risk management in general as well as the risk management practices in SMEs is provided. Next, the methodology, results and discussion, conclusions and then limitations of the study are provided in this paper.

2. LITERATURE REVIEW

While risk management within the FMCG SME industry is the central theme of this paper, the scope of the literature review in the following sections is expanded to embrace a generic discussion of the risk management in SMEs, due to the absence of literature specific to FMCG SMEs.

2.1. Risk management

The on-going evolution of technology is fuelling the persistent transformation of the business landscape, i.e., substitute products are now developed faster, competition is becoming stiff worldwide, and operations are becoming significantly more complex (Juliff, Kado, & Barta, 2013:20). In this volatile business environment, risk management is a critical factor that can enhance the chances of sustained and successful business longevity (Dubihlela & Gwaka, 2020). It is, therefore, undoubtedly that any business enterprise must develop and implement sound risk management practices. There are various acknowledged definitions of risk management in use. Some scholars view risk management as a decision-making process without the identification and evaluation of risk. In contrast, others see it as a complete process, including identification, evaluation, mitigating, and monitoring of risk (Berg, 2010:81). In general terms, risk management refers to a system of evaluating, reducing, and avoiding unintentional loss to an entity, by making use of insurance and safety measures (Dictionary.com, 2019). In core, risk management entails identifying, evaluating, prioritizing, mitigating, and monitoring of risks (Berg, 2010:80). It may be noted that the main objective of risk management is not to prohibit taking a risk but to minimize risks up to a tolerable level for an enterprise (Abrams, Von

Kanel, Muller, Pfitzmann & Ruschka-Taylor, 2007:222; Dubihlela & Gwaka, 2020). In this case, risk tolerance demarcates the margins of the risk-taking outside of which the business is not prepared to venture (Smit, 2012:266). Other objectives of risk management differ among business since businesses vary in size and level of complexity (Andersen, 2006:31). Some more generic goals of risk management noted by Verbano and Venturini (2013:188); Abrams et al., (2007:222); Dubihlela and Gwaka (2020:59) include:

- **Create business value:** To increase business profits by reducing costs and ultimately to allow the business to achieve its mission.
- **Minimize risks up to a tolerable level:** Risk tolerance demarcates the margins of the risk-taking outside of which the business is not prepared to venture.
- **Manage risk environment:** To reduce the likelihood and possible impact of potential losses, and to ensure sufficient financial protection against potential losses.
- **Promote risk awareness:** Through the risk identification step, risk management creates awareness of the possible threats that may prevent the business from achieving its objectives.

2.1. 1. Risk management process

The previous section has revealed several benefits that may stem from making fair use of risk management initiatives ranging from monetary to non-monetary benefits. To ensure that businesses reap maximum benefits from risk management, frameworks have been developed to establish the processes of risk management (Sunjka & Emwanu, 2015:1474). These frameworks include, but not limited to, Operational Risk Management, Corporate Governance, and Enterprise Risk Management, which were proposed by previous researchers to depict specific steps that combine to form the risk management process. However, these frameworks differ in the exact composition of the components of the risk management process. Despite such variation, there are universally acknowledged steps that are usually considered in this process to deliver a simple and effective risk management process (Young, 2006:31). These are schematically depicted in Figure 1.

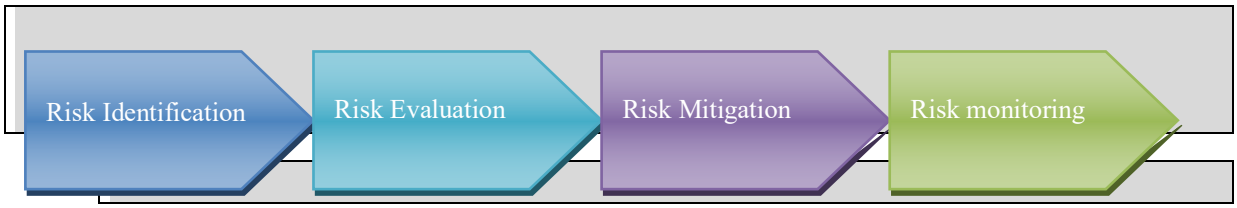

Figure 1: Risk management process (**Source**: Kagwathi, Kamau, Njau & Kamau, 2014:3-4)

2.1.1.1. Risk identification

Risk identification is the initial step of the risk management process, which involves identifying and documenting the business's key risks (Kavaler & Spiegel, 2003:4). The objective of identifying and documenting risks is to create awareness of the future uncertainties to enable these events to be managed most efficiently and proactively (Hallikas, Karvonen, Pulkkinen, Virolainen & Tuominen, 2004:52). To manage risks efficiently and proactively, there should be a rigorous and continuous process of risk identification that also consists of mechanisms to identify new and emerging risks timeously (Shenkir & Walker, 2007:4). Identifying new and emerging risks should start by understanding the business objectives, both implicit and explicit. Once the objectives have been defined, risks that may prevent the business from achieving those objectives will then be identified from both internal and external factors (Tsiouras, 2015).

Internal factors include infrastructure (capital access, raw 'materials' availability), human (loss of key staff, fraud), operational (machine or tool breakdown, systems failure), health and safety (work-related accidents and injuries) managerial and leadership (governance risk, reputation risks), etc. (Pojasek, 2013:84). On the other hand, external factors include economic factors (interest rates, exchange rates), environmental factors (natural resources), social factors (customer behavior, demographics), etc. (Pojasek, 2013:84). Tools used to identify risks from these factors could include the use of flowcharts, physical inspections, brainstorming and many others (Shenkir & Walker, 2007:4). The selection of an appropriate tool is influenced by the nature of the factors under evaluation, types of risks, the business context, and the objective of the risk management exercise (Dinu, 2012:69). For instance, where less time and funds are available for risk identification and analysis, a checklist and judgments based on experience may be used.

Once possible risks have been identified from internal and external factors using the preceding tools, it is of paramount importance to have a template for recording relevant information concerning each risk (AIRMIC, Alarm, and IRM,

2010:5). AIRMIC, Alarm, and IRM (2010:5) point out that the primary purpose of a template is to provide a detailed description of risks in a table, risk register, spreadsheet, or a computer-based system in order to promote a comprehensive risk assessment process. There is no particular blueprint for the layout of the template for recording risks register, and every business has a high degree of flexibility concerning how it lays out its templates (AIRMIC, Alarm, and IRM, 2010:5). Table 2.6 depicts a collection of information that could be recorded for each risk.

Table 1: Detailed risk description

ITEM		EXPLANATION/EXAMPLE
1.	Name or title of risk	Unique identifier or risk index
2.	Risk category	Economic, operational, strategic, environmental, etc.
3.	Cause of risk	How and why the risk could happen
4.	Impact on business	The qualitative and/or quantitative cost should the risk materialize
5.	Loss of experience	Previous incidents and prior loss experience of events related to the risk
6.	Risk appetite	Whether the risk is acceptable or whether it needs to be treated
7.	Risk controls	The existing internal controls that may minimize the likelihood of the risk occurring
8.	Risk rating	A risk level rating based on pre-established criteria, e.g., high, medium or low
9.	Risk owner	A person accountable for risk treatment and monitoring

Source: AIRMIC, Alarm, & IRM (2010:5)

Once the risks have been identified and documented, an evaluation of whether the risk is acceptable or whether it has to be mitigated needs to be performed. This will be achieved in the next step.

2.1.1.2. Risk evaluation

As shown in Figure 1, risk evaluation is the second step of the risk management process. As noted by Braendeland and Stolen (2004:156), it involves the determination of the magnitude of risk and prioritizing risks. Essentially, this step is into two efforts; determining the extent of risks and prioritizing risks (Braendeland & Stolen, 2004:156). The magnitude mainly refers to the level of possible consequences (degree of impact) and the likelihood (level of probability) associated with the risk occurrence (KarimiAzari, Mousavi, Mousavi & Hosseini, 2011). Basically, the higher the likelihood of a "worse" effect taking place, the greater the level of risk. Determining the magnitude of risks usually involves using quantitative techniques or qualitative techniques, or even a hybrid of both0020(Choudhry & Iqbal, 2012).

Qualitative techniques use descriptive words to categorize and document the impact and probability of risk, e.g., words such as high-impact and low-probability (Cox, Babayev & Huber, 2005:651). First, the risk team must determine the scoring scale. The most widely utilized qualitative scoring techniques use a 5-point scale for impact and a scale of 1% to 99% for probability (COSO, 2004:4). Each risk is allocated a priority category according to the perceived level of risk. For example, if the risk team decides on using 3-point, then 3 may mean a high impact, 2 may indicate a medium effect, and 1 may mean a low impact. Using the same ordinal ranking system, a score of 1 could mean low probability which may represent probabilities from 1% to 33%, 2 could mean medium probability which may represent probabilities from 34% to 66%, and 3 could mean high probability which may represent probabilities from 67% to 99%. Then when evaluating the impact and likelihood, the risk team may look at the risk and decide that it has a high impact and high likelihood; as a result, it receives a score of 3 for the impact and probability. Qualitative risk evaluation is subjective, as it is performed by individuals participating in the risk evaluation based on their experience and personal

perceptions of the risk impact and probability (Bahamid & Doh, 2017:4)

Unlike qualitative risk evaluation that assigns each risk into a high, medium, or low category, the quantitative risk evaluation calculates a numeric financial impact on a business, in case a risk occurs, and its probability as a percentage (Ramona, 2011:1108). For example, it may quantify the impact in terms of cost, number of injuries or accidents, number of machine breakdowns, etc. Qualitative and quantitative risk evaluation techniques complement one another and are best used collaboratively, one after the other (Svensson, 2017:11). Ideally, qualitative risk evaluation should be conducted before the quantitative one as this will allow the risk team to focus the quantitative risk evaluation on the risks with the highest probabilities and impacts.

Risks are not of tantamount importance to a business, and as such, there is a need to prioritize risks in order to determine significant risks that require ' 'management's close attention (Bartlett, 2004:101). Therefore, the results of the qualitative and quantitative risk evaluation will then be used to rank risks according to their level of impact and probability. For example, if the impact has been assigned scores as follows: 1 = Minor, 2 = Moderate, 3 = Severe, 4 = Very Severe, and 5 Extreme (Department of Environmental Affairs and Tourism (DEAT, 2006). While probability has been assigned scores as follows: 1 = Very unlikely, 2 = Unlikely, 3 = Likely, 4 = Very likely, 5 = Almost certain (DEAT, 2006). These values will then be imported into the risk formula (impact multiplied by probability), and the calculated answers become risk ratings. These risk ratings can be represented in a risk matrix format, as shown in Table 2.

Table 2: An example of a risk matrix

Impact	**5 Extreme**	5	10	15	20	25
	4 Very Severe	4	8	12	16	20
	3 Severe	3	6	9	12	15
	2 Moderate	2	4	6	8	10

	1 Minor	1	2	3	4	5
	Value level descriptor	**1 Very unlikely**	**2 Unlikely**	**3 Likely**	**4 Very Likely**	**5 Almost certain**
		Probability				

Legend

	Extremely high risk
	Very high risk
	High risk
	Medium risk
	Low risk

Source: DEAT (2006)

From Table 2, risks falling between the ranges of 1 to 4 have very unlikely to the very likely probability of happening and a minor to very severe impact on the business and therefore are ranked as low risks. Risks falling between the ranges of 5 to 10 have a very unlikely to the almost certain probability of happening and a minor to extreme impact on the business and therefore are ranked as medium risks. Risks falling between the ranges of 12 to 16 have a likely to the almost certain probability of happening and a severe to extreme impact on the business and therefore are ranked as high risks. Risks with a risk rating of 20 have a very likely to the almost certain probability of happening and a very severe to extreme impact on the business and therefore are ranked as very high risks. Then risks with a risk rating of 25 have an almost certain probability of happening and an extreme impact on the business and therefore are ranked as severe high risks.

2.1.1.3. Risk mitigation

The results of identifying, evaluating, and prioritizing risks can then be used to develop strategies to manage risks during the risk mitigation stage. Thus, the management will come up with strategies to prevent the risk from occurring or minimize the effect should the risk occur (Smit, 2012:283). Zsidisin and Ritchie (2009:93) mention that principle management strategies addressing risks may include acceptance, avoidance, mitigation, and transfer.

In a risk avoidance strategy, the risk team strives to get rid of the risk entirely from its effects on the business, in instances where the risk might change the business objective (Bahamid & Doh, 2017:5). Typically this means that the company opts not to embark on an activity associated with a particular risk. In risk transfer strategy, the risk team shifts the accountability of a possible threat to a third party, e.g., an insurance company (Wang & Chou, 2003). In risk mitigation strategy, the risk team attempts to lessen the probability of a risk event from happening by using an appropriate action plan and resources, e.g., putting in place internal controls (Bahamid & Doh, 2017:5). However, when risks cannot be avoided, transferred, or mitigated, the team risk adopts a risk acceptance strategy; in this case, it takes no action (Goh & Abdul-Rahman, 2013:22). Usually, the risk team will choose to accept those risks that are of low impact to the business.

When positive risks or opportunities occur or are anticipated, exploit and enhance are typical strategies that are likely to be applied in response. The exploit strategy is applied when the risk team takes advantage of an opportunity if it materializes (Banham, 2004:68). Then enhance strategy is used when the risk team anticipates an opportunity and increases the probability of its occurrence through the allocation of appropriate action plans and resources (Smit, 2012:279).

2.1.1.4. Risk monitoring

Risk monitoring, as the final step, involves checking risk plans regularly to ensure their execution and effectiveness in reducing risk. Berwick (2007:22) emphasizes that risk plans should be frequently reviewed to see if they are achieving intended results, which is ensuring effective risk management. The best risk monitoring practices provided by the Project Management Institute (2016) are as follows:

- **Reserve analysis:** This involves a comparison of the contingency reserves to the residual risk to determine if there is still sufficient buffer in the pool. In this case, contingency reserves refer to time, cash, or other resources set aside to manage risks that arise with time. These risks could be foreseen, like those recorded on a risk register. In contract, they could be unforeseen, such as new risks arising from risk monitoring. Contingency reserves get depleted over with time, as new risks

emerge, and reserves are used to mitigate them. Therefore, monitoring the level of reserves is a necessary task as it ensures that the reserve in the pool remains adequate to cover the remaining risks.

- **Risk Audit:** It is a process of examining and documenting the effectiveness of procedures and controls in managing risks and their impacts on the budget. Risk audits could be planned or could be triggered when thresholds are exceeded. Risk audits are usually executed by risk auditors, who have specific know-how in risk evaluation and auditing techniques. To achieve objectivity, risk auditors typically are not part of the risk team. Some businesses prefer to hire independent contractors to perform risk audits.

- **Risk reassessment:** Re-assessing risks make it possible for the risk team or risk owners to evaluate whether the risk probability, impact, or priority ratings are changing; new risks are emerging; old risks have vanished; and if risk strategies are still adequate. If a risk's probability, impact, or priority ratings have changed, or if new risks have emerged, the risk team may repeat the risk evaluation process to determine the risk's effects on the business.

- **Status meetings:** Status meetings present a platform for risk owners to share their experiences and inform each other on their risk status and plans. Such collaborative discussions enable risk owners to bring to light risks that are emerging, whether or not planned risk strategies are working, and areas where additional resources are needed.

- **Variance and trend analysis:** Variance analysis evaluates the discrepancy between the planned and the actual results in order to find out any unacceptable risks to the business. Trend analysis entails observing the business performance over time to establish if performance is getting better or worse.

From the analysis of various risk monitoring techniques, it is clear that during the risk monitoring step, old risks are tracked, residual risks are observed, and new threats are identified. These outputs are used to update the risk register and other

risk documents for the benefit of future risk owners.

2.2. Risk management practices in SMEs

A systematic approach to identify and evaluate risks along with mechanisms to minimize them are critical to guarantee a ' 'business's survival and create sustainable value. This holds particularly for SMEs as they are highly exposed to multiple risks, as a result of limited resources (Verbano & Venturini, 2013:186). To mitigate the risks aroused out of various reasons, here in this paper, it is found that by deploying risk management systems, SME owner-managers can easily save their businesses or at least lessen their losses. In this connection, this section explores past research and existing literature related to the risk management practices in SMEs to determine if risks are adequately and effectively managed:

2.2.1. Building of relationships

As Sunjka and Emwanu (2015:1482) pointed out in their study of four SMEs that have been trading for more than 20 years, building a good working relationship with staff, banks, suppliers, and customers is a central risk management practice. The study further clarifies that these relationships stimulate trust, offer mutual benefits, and eventually contribute to risk mitigation. This is echoed in a large-scale study by Kim and Vonortas (2014), which showed that building relationships is a frequently used risk mitigation strategy in SMEs and according to their findings, mostly for coping with human resources, financial and market risks.

2.2.2. Insurance

This involves paying premiums to an insurance firm so that when a risk occurs, the insurance firm will take the business to its original position (Kagwathi et al., 2014:3-4). Dubihlela and Nqala (2017) described running an enterprise with basic insurance as a smart way of managing identifying risks and reducing uncertainty. About 58.2% of the selected Western Cape SMEs in survey research by Smit (2012:236) indicated that insurance is their primary tool for managing risks identified in financial, operational, and marketing areas. However, a survey of 1,000 registered Australian SMEs by the Insurance Council of Australia (2008) exposed that sole proprietors have the most significant rate of non-insurance, with 40.0%

running their businesses without general insurance. The study further discloses that 80% of the owners who bought insurance were under-insured. A possible explanation for this, according to Smit and Watkin (2012), is that many SMEs regard insurance as a rip-off.

2.2.3. Diversification

This involves selling a variety of products or services as a strategy for risk management. To some extent, owners and managers of SMEs adopt diversification strategy (Kagwathi et al., 2014:3-4); however, this strategy could be more effective if these entrepreneurs were skilled at choosing the suitable business combinations in their portfolios (Kamau & Njau, 2011).

2.2.4. Risk avoidance

The qualitative study by Boubala (2010:72) of 150 ' 'SME's within the Cape Metropolitan area showed that most of the respondents do not know how to determine their business risk appetite. Thus, ICAEW (2005) reasoned that SMEs risk management techniques are primarily limited to risk avoidance actions. In line with this notion, a study by Smit and Watkins (2012) concludes that SMEs owner-managers prefer to avoid risks instead of devising risk control methods. This hinders the economic progress of a nation since every enterprise can be defined by its capacity to take on more significant risks (Kagwathi et al., 2014:3).

Despite the fact that the risks and mitigation measures deployed by SMEs mentioned earlier, scholars and practitioners alike raised questions about their effectiveness since the rise of SMEs. This emanates partly from the fact that the management of risks in SMEs resides with the entrepreneur's evaluation of adverse events and opportunities concerning his or her business (Watt, 2007). Yet, these SME entrepreneurs have a generally low level of managerial skills (Kaminskaite, 2017:11). As such, a structured approach to risk management would not be high up on their agenda (Naude & Chiweshe, 2017:1).

2.3. Factors inhibiting effective risk management in SMEs

In the previous section, it was confirmed that SME owner-managers have risk mitigation measures in place. While most SMEs adopt risk mitigation measures, the section further revealed that these measures are not adequately and productively employed. Several studies found numerous examples of SMEs that take an unstructured approach to risk management (Gao, Sung & Zhang, 2013; Sukumar, Edgar & Grant, 2011; Poba-Nzaou et al., 2014). The findings established that the implementation of risk management in SMEs is influenced by financial constraints, lack of technology, and lack of knowledge.

According to Aureli and Salvatori (2013:23), astringent risk management system requires sufficient financial resources. For example, cash is needed to hire risk experts to support the implementation of effective risk management. However, SMEs are faced with funds mobilization constraints (Yang, Chen, Gu & Fujita, 2019:1). Their financial exclusion is a major hampering factor because lending to these enterprises is considered inherently risky as they lack collateral security (Booyens, 2011; FinScope, 2010). Still, Berger and Udell (2006) highlighted that the transactional income of SMEs does not sufficiently meet their financial requirements. As a result, Aureli and Salvatori (2013:30) noted that SMEs have little or no financial resources to invest in risk management activities.

Related risk tools and technologies like the ERM software help management visually depict, size, assess, and address risk concerns""" (Patterson, 2015). However, most of the SME entrepreneurs are unaware of technology, and if they know, it is often unaffordable to them (Farsi & Toghraee, 2014). The main obstacles to technology development within the SME sector are elaborated by Farsi and Toghraee (2014) as follows: (1) a shortage of funds; (2) the process of allocation of loans is very lengthy and expensive to SMEs; (3) the low profitability of SMEs, which restrains investment in technology modernization; and (4) lack of knowledge of entrepreneurs regarding the importance of technology. The absence of technology within SMEs has made it difficult for these enterprises to attain effective risk management.

Furthermore, proper risk management practices require vigilant management attention, a high level of professionalism and knowledge (Aureli & Salvatori, 2013:23). However, SMEs are often sole proprietorship and partnerships which are characterized by poor employee education, lack of professionalism, and over-dependence on one or two key people (Zivanai, Onias, Lloyd, Felix & Chalton, 2014:195). As a result, SMEs owner-managers may face difficulty in identifying and evaluating emerging risks resulting in under-treatment of risks (Financial Management Branch of Queensland Treasury, 2011:56), hence, the need to put forward measures to assist SMEs to deal with lack of knowledge and other factors inhibiting effective risk management within their businesses.

3. METHODOLOGY

A mixed methods approach that facilitated the utilization of a questionnaire and an interview guide as instruments within the quantitative and qualitative research paradigms was employed for data collection. The qualitative method helped to authenticate the quantitative one.

3.1. Population and sampling

The population of interest for this study consisted of every FMCG SME, which was operating in the Cape Metropole at the time of the research. The sampling frame was limited to operating in the FMCG sector of the Cape Metropole, South Africa, FMCG SMEs were selected since they are regarded as the most vital enterprises in the SME industry due to the nature of their products (basic and short-lived) (Singh, 2014).

In order to make sure that participants with adequate and appropriate work experience in the field of risk management were chosen during the sampling procedure, the target population was limited to managers and owners of FMCG SMEs operating in the Cape Metropolitan area. Managers and owners were selected because they are regarded as the decision-makers in their enterprises and thus, they are likely to be aware of the risk management practices put in place in their businesses.

In the absence of a complete list of all FMCG SMEs operating in the Cape Metropolitan area, the purposive sampling method was used to identify the 320 FMCG SMEs that participated in the quantitative component of this research.

LinkedIn was used as a method for recruiting participants for personal interviews. This approach relied on individuals self-identifying themselves as risk consultants or something similar. In this case, LinkedIn was helpful as it returned 5174 results, which we compiled into a spreadsheet. However, we only added 30 results to the spreadsheet since our study targeted only 4 participants. In order to come up with the 30 potential participants, we first vetted the credentials by going through the LinkedIn profiles, only those that we thought would best enhance our study were selected. For each chosen candidate, we noted his or her name, risk experience, location, and any other relevant information listed in the profile. This information is already available for public consumption, and as such, we have implied consent. Each potential participant was then sent a personalized recruitment message explaining the study and how we had identified him or her as a possible participant.

Out of the 30 invitations sent out, 27 responses were received. The next step was to draw a sample of 4 interviewees from the 27 responses received. To achieve this, researchers employed the order by which the response to invitations was received. However, the responses: 1, 2, 5, and 11 ended up being chosen. The responses 5 and 11 were purposefully selected since the participants who sent them were risk experts employed by banks. It was necessary to include bank officials in our study because a lack of access to loans by SMEs (a barrier to effective risk management) was voiced in the literature review. However, the opinions expressed by the bank officials in our study are their own and do not reflect the views of their employers.

We recorded each interview and took notes at the same time. The audios for each interview were allocated codes as follows: bank employees, Participant – BE1 and Participant – BE2, then other business risk experts, Participant – BRE1 and Participant – BRE2.

4. RESULTS AND DISCUSSION

The survey questionnaire constituted the main source of primary data in this study, even though personal interviews were also used. Hence, the results of the quantitative survey questionnaire will be discussed first. Direct quotes from risk experts that are deemed necessary are used to complement and validate the findings of the survey questionnaire.

4.1. Descriptive Statistics and graphical displays

The descriptive statistics were computed based on the frequencies in each category and the total sample. The descriptive statistics were then displayed graphically to provide a visual representation of the individual variables.

4.1.1. Graphical display of demographic variables

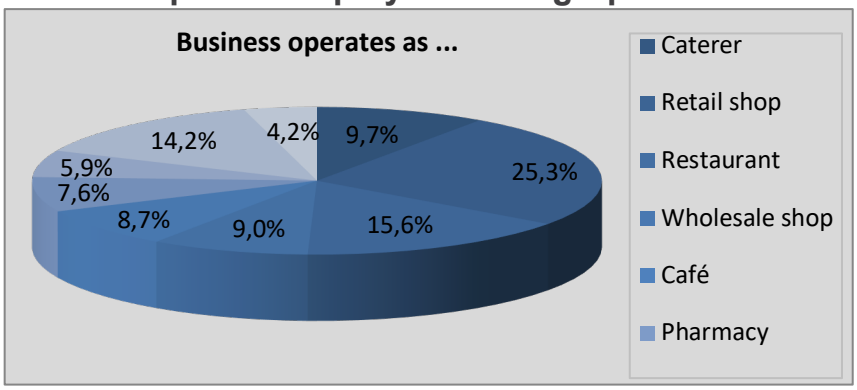

Figure 2: Pie with 3D visual effect showing as what business is operating as

Source: 'authors' own

According to Figure 2, the majority of our respondents are in retail (25.3%), followed by the restaurant (15.6%) and then convenient (14.2%). Very few of our respondents are trading products that are subject to stringent regulations like alcoholic products (5.9%) and medical products (7.6%). Then the respondents, who have selected "other businesses that they are operating as, indicated mostly businesses that require less capital to set-up and run them, these businesses include "small butcheries, chicken and chips shops, fruit and vegetable shops, hair salons. A close analysis of these results depicts that less regulation and less start-up capital are the most notable characteristics of FMCG SMEs.

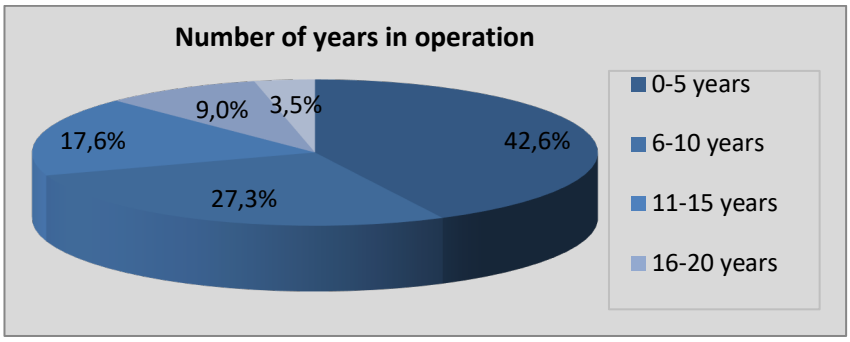

Figure 3: Pie with 3D visual effect showing the number of years in operation

Source: 'author's own

As highlighted by Figure 3, the percentage of FMCG SMEs found within the period groups decreases as the number of years increases. Thus, the most influential period group is the 0-5 year group, within which 42.6% of the surveyed FMCG SMEs are found. This is followed by the 6-10 year group, which comprise 27.3% of the surveyed SMEs. The third-period group (11-15 years) made up 17.6% of the surveyed FMCG SMEs. Then, the 16-20 year group consists of 9.0% of the surveyed FMCG SMEs. The least dominant group is the more than 20 years group, which comprise only 3.5% of the surveyed FMCG SMEs. The distribution of the surveyed FMCG SMEs concerning the number of years in operation suggests that FMCG SMEs, in general, have a short life span.

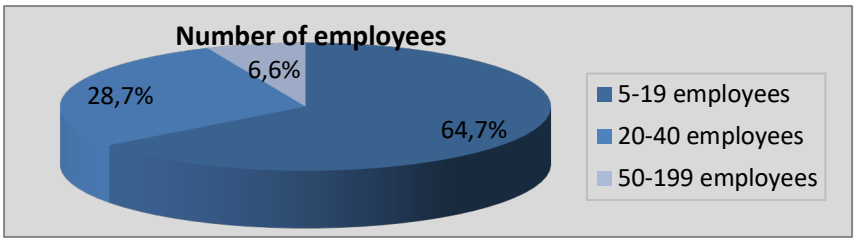

Figure 4: Pie with 3D visual effect showing the number of employees

Source: 'authors' own

As shown in Figure 4, the respondents are not equally distributed in the different number of employee groups. Thus, 64.7% of the respondents indicated that there are 5-19 employees in their businesses, 28.7% have 20-40 employees in their business, and 6.6% have 50-199 employees in their companies. However, it should be noted that FMCG SMEs with a total number of permanent workers less than 5 (micro-enterprises) were excluded from the data processing since this study was

based only on Small and Medium-sized Enterprises.

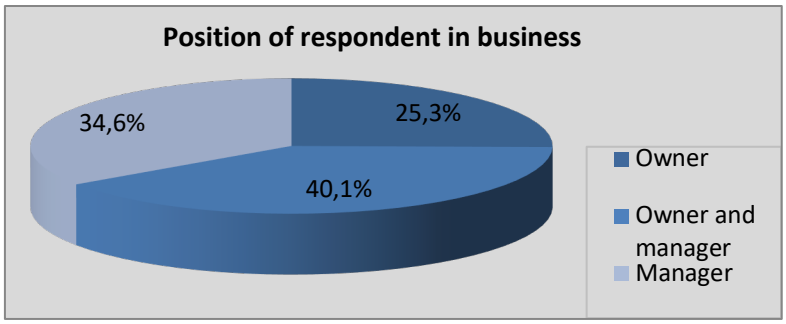

Figure 5: Pie with 3D visual effect showing position in business
Source: 'authors' own

The results in Figure 5 indicate that all our questionnaires were completed by respondents who are more likely to make decisions and manage FMCG SMEs. Thus, 25.3% of the respondents reported that they are the owners of the business, 40.1% are the owners as well as the managers of the business, and 34.6% are the managers of the business.

4.1.2. Graphical display of the tools or methods used to identify risk

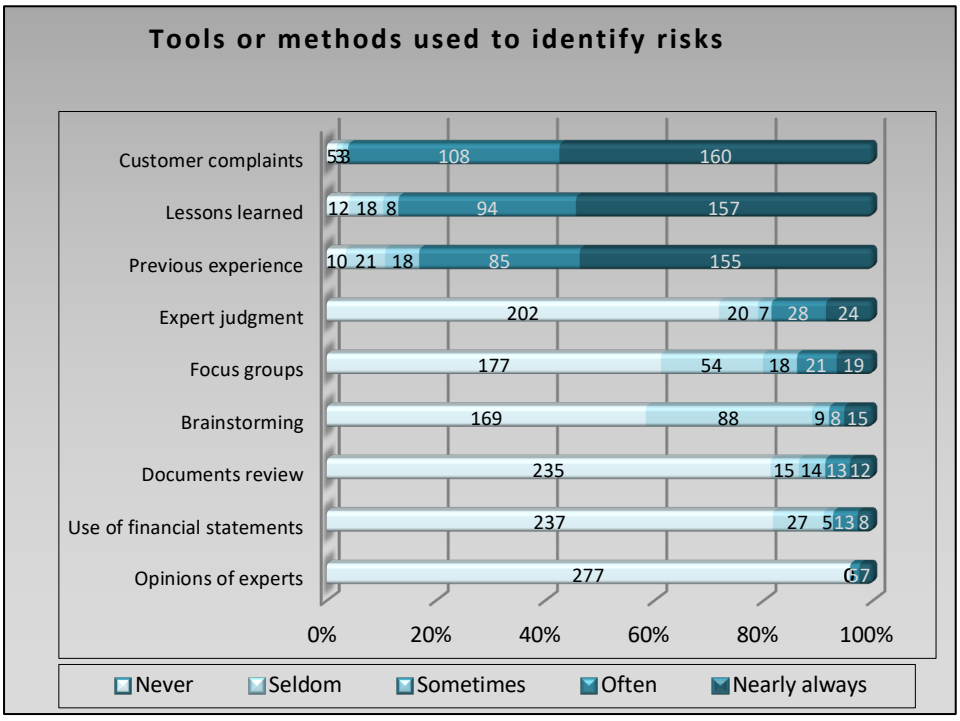

Figure 6: 100% stack bar showing the tools or methods used to identify risks
Source: 'authors' own

From Figure 6, it is evident that expert judgment (23.2%), and group-based techniques like brainstorming (11.1%), and focus groups (20.1%) are less practiced by SMEs. This finding may be due to 'SMEs' inadequate level of knowledge and resources, as indicated by the survey results presented in Table 3. Also, it is quite evident that very few SMEs rely on document review (13.5%) and financial statements (8.7%) when identifying risks. This result may be due to 'SMEs' lack of accounting records and inadequate financial statements (Iopev & Kwanum, 2012:153). It appears that most SMEs depend on customer complaints, lessons learned, and previous experience when identifying risks in their business. ***The results of the personal interviews did not show any parallel or new data regarding the tools or methods used to identify risks by FMCG SMEs.***

4.1.3. Graphical display of the tools or activities used to evaluate risks identified

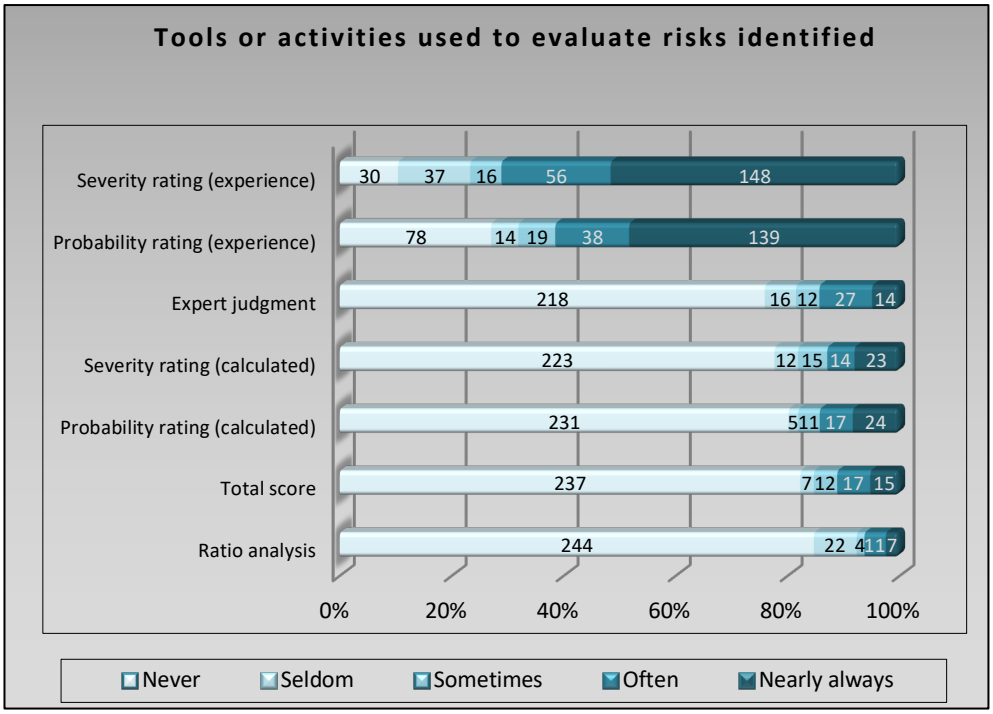

Figure 7: 100% stack bar showing the tools or activities used to evaluate risks identified

Source: authors

Past studies have shown that risk owners often rely on the mathematics to determine the probability of risk realization and the severity of the impact thereof (Sikich, 2016;

Covello, Menkes, & Mumpower, 2012:505; Lewis, 2004:xiii). In contrast, evidence from the survey questionnaire suggests that FMCG SME owner-managers evaluate the probability and severity of risk occurrence using their own experience and intuition. This is confirmed by the results in Figure 10, which indicate that SMEs have limited resources and knowledge to practice risk management formally and adequately. Furthermore, the survey questionnaire results in Figure 8 suggest that most SME owner-managers avoid any risk event regardless of their level of probability and severity. ***This is in congruence with the results of the personal interviews, which did not reveal any evidence of tools or activities which are used to evaluate risks in FMCG SMEs.***

4.1.4. Graphical display of the tools or activities used to manage risks identified

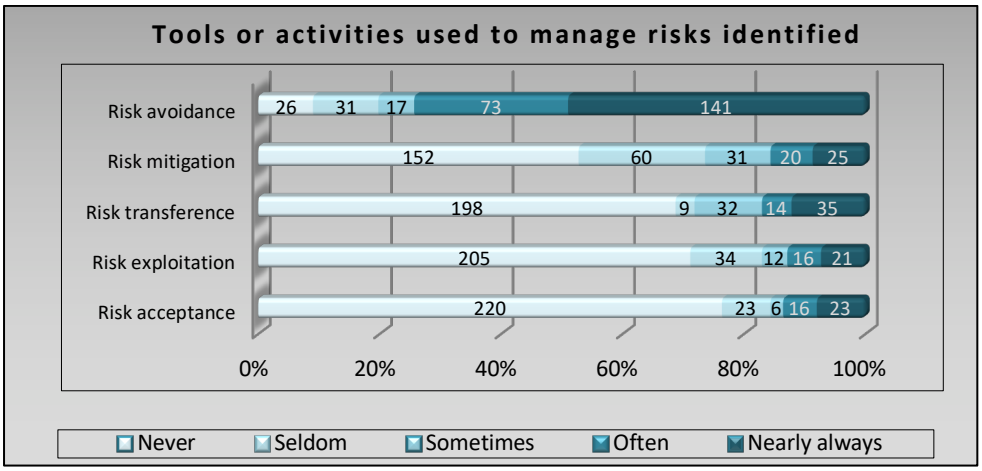

Figure 8: 100% stack bar showing the tools or activities used to manage risks identified

Source: authors

About risk treatment, the survey mentioned above questionnaire results have revealed that risk transfer, e.g. through insurance is less practiced in SMEs. This finding endorses the finding of a previous study conducted by the Insurance Council of Australia (2008), which shows that SMEs have the highest rate of non-insurance.

From a qualitative point of view, the response from one of the risk experts interviewed that supports the result above is:

"""…most of them do not take out insurance, they either increase the price or use their personal funds to rescue their business when a risk has taken place""…" **(Participant – BRE2)**

Also, the survey questionnaire results in Figure 8 show that the least practiced methods of treating risks in SMEs have proved to be risk acceptance, risk mitigation, and risk exploitation. The results further show that most SME owners and managers regard risk avoidance as the most preferred method of treating risks in their businesses. ***In the personal interviews, the risk experts concurred with these results, but also noted that the majority of the methods used by SMEs to manage or treat risks are either informal or reactive, for example, the classical way of developing a credit policy is mostly absent (see table 3) and instead, friendship, trust and customer loyalty come into play. Accordingly, below is what the risk experts had to say:***

"SMEs generally do not have specific risk management plans in place. Their approach is to wait for problems to take place and then look for solutions to solve them as soon as possible. This would mean waiting for a cash register machine to break and then hire an expert to fix it or assuming workers are satisfied until one of them lodges a complaint". **(Participant – BRE1)**

"""Risk management practices in retail SMEs are mostly informal due to ignorance and lack of understanding of proper risk management, for example, most of them do not take out insurance, they either increase the price or use their personal funds to rescue their business when a risk has taken place, some even employ their friends or relatives as a way of avoiding risks like employee theft. Moreover, credit facilities are in most cases given to clients based on friendship, trust, and customer loyalty""". **(Participant – BRE2)**

4.1.5. Graphical display of the tools or activities used to monitor risks

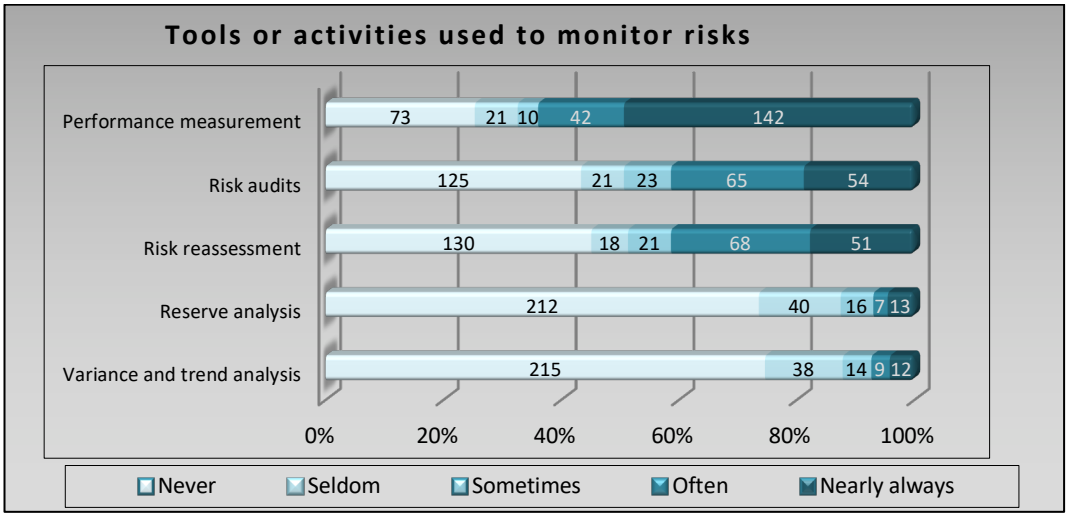

Figure 8: 100% stack bar showing the tools or activities used to monitor risks
Source: 'authors' own

In terms of risk monitoring, the survey, as mentioned above, questionnaire results have shown that variance and trend analysis, and reserve analysis are the least practiced methods of risk monitoring in SMEs. This finding is substantiated by the absence of budgetary control and contingency fund account in SMEs (See Table 3). Furthermore, the survey questionnaire results revealed that risk re-assessment and risk audits are less practiced in SMEs. The most practiced method of monitoring risks in SMEs turned out to be performance measurement. However, the effectiveness of this method is questionable since a study by Hathway Management Consulting (2013:6) showed that SMEs do not have written business objectives, yet clearly defined business objectives are central for performance measurement. ***The results of the personal interviews did not show any parallel or new data regarding the tools or activities used to monitor risk.***

4.1.6. The existing elements of risk management in SMEs

Table 3: The existing aspects of risk management in SMEs

14. Do the following aspects of risk management exist in your business?				
14.a	A risk appetite is set	Yes	51	17.6%
		No	238	82.4%
14.b	A credit risk policy is developed and implemented	Yes	31	10.7%
		No	258	89.3%
14.c	Offer employee development programs and continuing education	Yes	60	20.8%
		No	229	79.2%

14.d A system of budgeting and cost control is implemented to reduce the risk of continued unfavorable cost variances	Yes	38	13.2%
	No	251	86.8%
14.e A contingency fund is set aside for responding to identified risks	Yes	38	13.2%
	No	251	86.8%
14.f A risk management plan exists	Yes	56	19.4%
	No	233	80.6%
14.g A risk response strategy is developed and implemented	Yes	67	23.2%
	No	222	76.8%
14.hAll staff levels are involved in risk management	Yes	47	16.3%
	No	242	83.7%
14.i A risk management framework is developed or adopted	Yes	80	27.7%
	No	209	72.3%
14.j Effective mechanisms of internal control are developed	Yes	72	24.9%
	No	217	75.1%
14.k Risk management is incorporated into the operating process and system design	Yes	160	55.4%
	No	129	44.6%
14.l The risk management process is regularly monitored, reported and kept up to date	Yes	166	57.4%
	No	123	42.6%
14.m Risks are actively identified, categorized, prioritized and documented before being treated	Yes	194	67.1%
	No	95	32.9%

Source: 'authors' own

The feedback on the elements of risk management that exist in the SMEs indicates that the essential elements of effective risk management are mainly absent in SMEs. The features of risk management that exist mostly in SMEs appear to be:

- ✓ Risks being actively identified, categorized, prioritized, and documented before risk treatment, which is a good starting point for an effective risk management system.
- ✓ The risk management process is regularly monitored, reported, and kept up to date.
- ✓ Risk management is incorporated into the operating process and systems design.

However, further analysis of the results revealed that there is an association between the period businesses are operating in and the elements of risk management that exist in SMEs. Thus, in all the above scenarios, more business which served more

than ten years indicated yes than businesses which operated 0-10 years (See Table 4 and Figure 10).

Table 4: Statistically significant chi-square test

Question/Statement		Sample Size	Chi-Square	DF	P-Value
Period business is operating in versus:					
14a	A risk appetite is set	289	143.7882	1	**<0.0001**
14b	A credit risk policy is developed and implemented	289	80.6254	1	**<0.0001**
14c	Offer employee development and continuing education	289	143.8727	1	**<0.0001**
14d	A system of budgeting and cost control is implemented to reduce the risk of continued unfavorable cost variances	289	101.5874	1	**<0.0001**
14e	A contingency fund is set aside for responding to identified risks	289	101.5874	1	**<0.0001**
14f	A risk management plan exists	289	129.9956	1	**<0.0001**
14g	A risk response strategy is developed and implemented	289	161.5772	1	**<0.0001**
14h	All staff levels are involved in risk management	289	130.3204	1	**<0.0001**
14i	A risk management framework is developed or adopted	289	204.6835	1	**<0.0001**
14j	Effective mechanisms of internal controls are developed	289	180.5973	1	**<0.0001**
14k	Risk management is incorporated into the operating process and system design	289	100.3542	1	**<0.0001**
14l	The risk management process is regularly monitored, reported and kept up to date	289	92.2280	1	**<0.0001**
14m	Risk are actively identified, categorized, prioritized and documented before being treated	**289**	**60.9519**	**1**	**<0.0001**

Source: 'authors' own

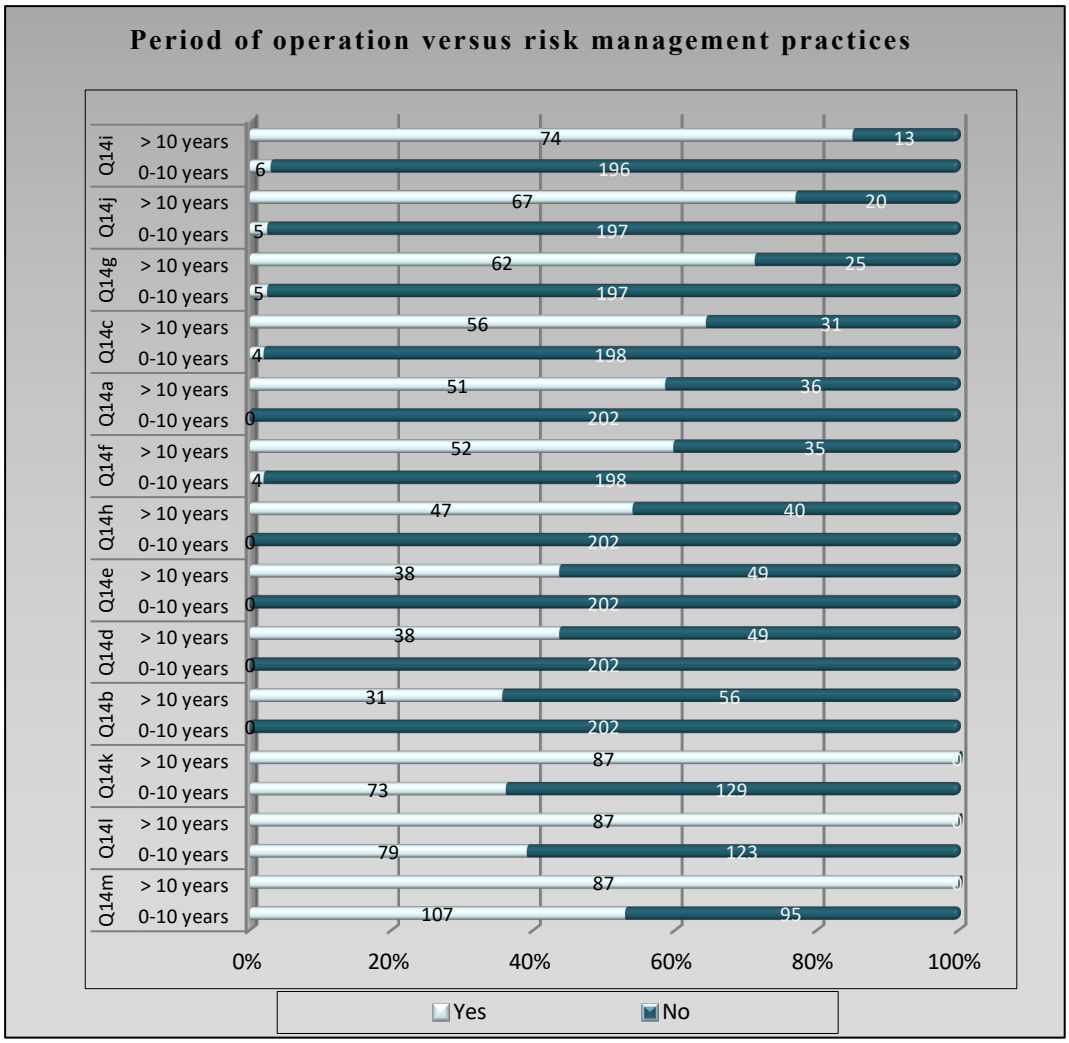

Figure 9: Period of operation versus risk management practices
Source: 'authors' own

The results in Figure 9 show that:

- ✓ For the statement "Risks are actively identified, categorized, prioritised and documented before being treated," 100.0% of the respondents in businesses that are in operation for more than 10 years indicated yes, while 53.0% of the respondents in firms which are in service for 0-10 years indicated yes.
- ✓ For the statement "The risk management process is regularly monitored, reported and kept up to date" 100.0% of the respondents in businesses which are in operation for more than 10 years indicated yes, while only 39.1% of the respondents in firms which are in service for 0-10 years indicated yes.
- ✓ For the statement, "Risk management is incorporated into the operating process and systems design" 100.0% of the respondents in businesses which are in

operation for more than 10 years indicated yes, while only 36.1% of the respondents in companies which are in service for 0-10 years indicated yes.

Therefore, the results, as mentioned earlier, are an indication that an SME that has existed for many years may point to a more elaborated risk management structure in that enterprise. Also, the fact that SMEs which are in operation for 0-10 years did not indicate the presence of some aspects of risk management in their businesses further supports the assumption that the survival of SMEs is adversely influenced by the accumulation of risks, which stem from lack of effective risk management practices. Similarly, such concerns regarding risk management and the survival of SMEs were also voiced in the previous studies (Islam & Tedford, 2012:3; Pyeman, Rashid, Hanif, Mohamad & Tan, 2015:247; Kaminskaite, 2017:11; Smit & Watkins 2012:6325). This research has thus further supported the view that SMEs with effective risk management mechanisms in place are likely to have a long life span than those without.

4.1.6. Graphical display of the main barriers to effective risk management

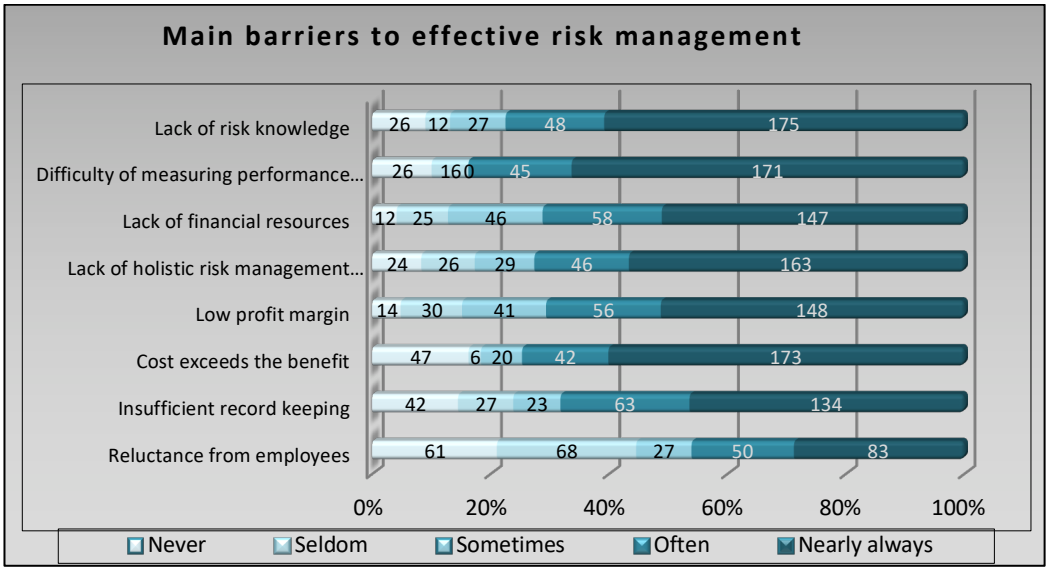

Figure 10: 100% stack bar showing the main barriers to effective risk management
Source: 'authors' own

Although Figure 10 shows that SMEs are faced with multiple obstacles which hinder the effectiveness of their risk management, lack of risk knowledge has turned out to

be the most significant one. Interestingly, lack of knowledge was also identified as the most significant obstacle in a similar study conducted by Zivanai, Onias, Lloyd, Felix and Chalton, (2014:195). ***The risk experts interviewed concurred with the previous results, as noted in the following sentiments shared:***

"Lack of competent employees who can identify and manage risks is a big one and what makes it even worse is the fact that they don't have the required cash to outsource services of experienced risk professionals, so risk management remains problematic within small retailers". **(Participant – BRE1)**

"""I think the absence of expertise and knowledge in retail SMEs is a huge obstacle for them to implement effective risk management. Most of them are managed by people with a low level of education who could be the owners…." **(Participant – BRE2)**

Furthermore, Figure 10 shows that an overwhelming majority of the survey questionnaire participants perceive that the cost of implementing risk management exceeds the benefit thereof. ***This finding is in sync with the verbal response of one of the risk experts interviewed who had this to say:***

"…most of them view risk management as an additional cost which could have a huge impact on their profit. They actually don't see the need to have it". **(Participant – BRE2)**

Figure 10 further shows that a lack of financial resources is another significant hurdle that many SMEs are facing in their efforts to implement effective risk management. Worse still, an overwhelming majority of the questionnaire survey participants have indicated that their profit margins are usually small to sustain risk management. ***Sadly, the personal interviews with the bank employees revealed that a tiny percentage of the SMEs' loan applications get approved due to mainly lack of credit history and lack of transaction history (bank statement). Accordingly, bank employees made the following comment:***

"Yes, we do, but the quality of applications we receive is the biggest challenge. Like I said before, several small businesses keep cash on their business premises even those with accounts, very few deposit all their proceeds into the bank account yet the most important source of financials is the bank statement, so by not depositing all their proceeds in the bank account, they may be disadvantaged when they ask for funding because their statements do not show all their revenue". **(Participant – BE1)**

"""Yes, but often you will find that because these entrepreneurs have no credit history, they get turned away when they apply for loans, only around 15% of our small to medium enterprise clients get their loan applications approved""". **(Participant – BE2)**

5. CONCLUSION

The high failure rate of businesses and the vulnerability a cohort of the SMEs has rendered risk management a very relevant area of research. Despite the vulnerability of Fast Moving Consumer Goods Retailers operating as Small and Medium Enterprises (FMCG SMES) in South Africa, there is a dearth of research on their sustainability and particularly their ability to mitigate risks. Many will agree that this research that the survival of SMEs is adversely influenced by the accumulation of risks, which stem from a lack of effective risk management practices. In an attempt to fill this knowledge gap, this paper investigated the risk management practices of FMCG SMEs in the Cape Metropolitan Area.The findings revealed that the FMCG SMEs have risk management mechanisms in place, but the tools are too simplistic and very informal. Even so, it was noted major that SMEs that existed for ten or fewer years tend to lack the crucial elements of a useful risk management tool kit as dictated by best practice. Aligned to this was the lack of budgetary control and contingency fund account in SMEs; lack of risk knowledge and so forth. As such, this paper proposes a practical risk management frame that is aligned with the needs of FMCGs. The framework presented in the article was informed by the empirical results and best practice as documented in the literature. The goal is to create a knowledge base that offers a unifying frame which aggregates and structure these critical elements frugally. These elements are portrayed in the form of a map shown

in Figure 11:

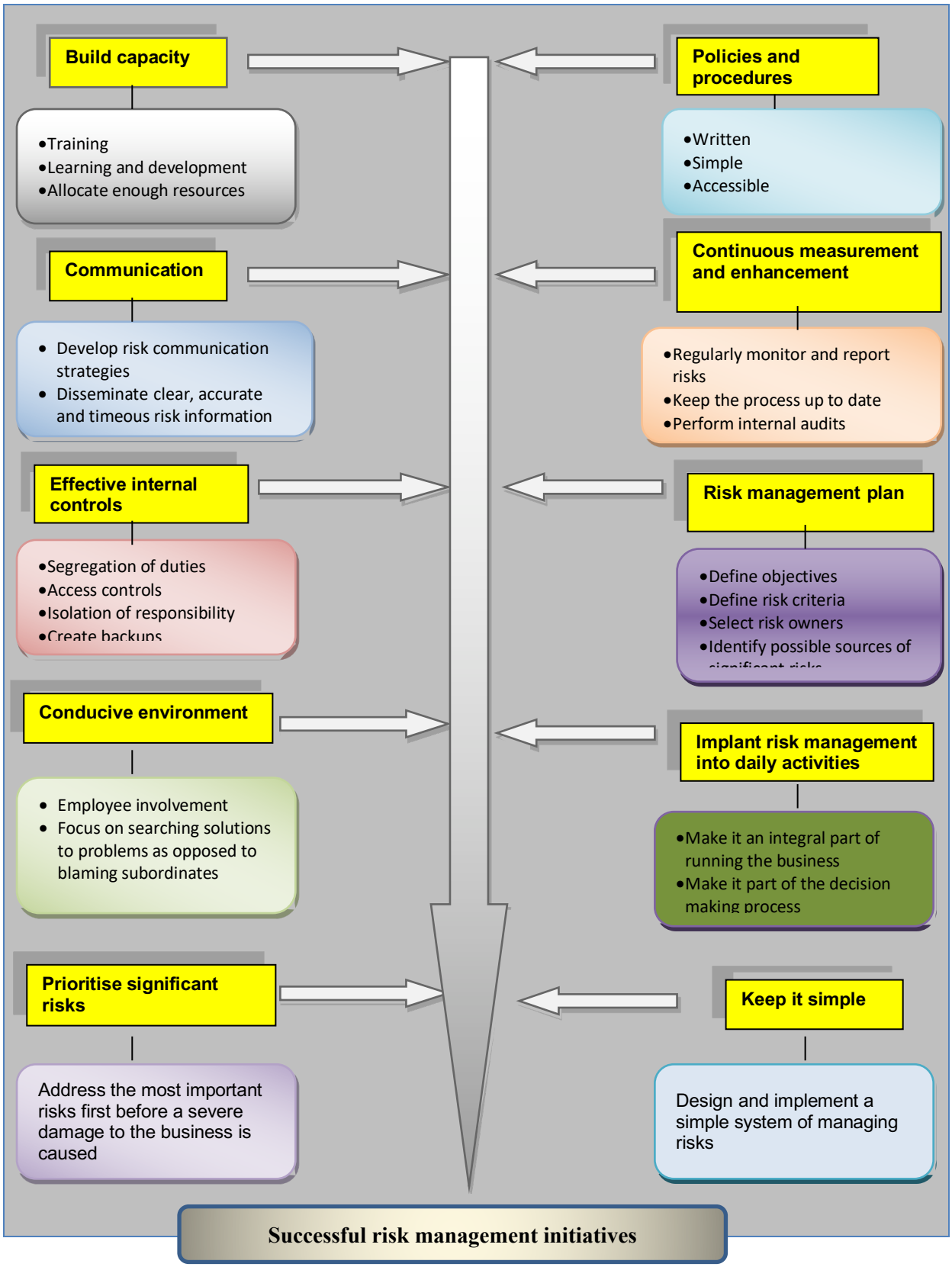

Figure 11: Framework for Risk management in FMCG SMES IN South Africa
Source: 'author's own

6. IMPLICATIONS

The findings of this paper bear implications in the areas of both academic circles and business. The paper contributes to the body of risk knowledge, by finding certain critical elements that are crucially important to manage risks within the FMCG SMEs successfully (see figure 11). In addition, this paper will help SME risk experts to recognize critical elements that have been proven to either cause an obstacle or foster effective risk management. From the risk manager's point of view, this paper demonstrates why certain elements should be considered to achieve a system of risk management.

6. LIMITATIONS AND STUDY FORWARD

The results of the current study were based on a sample of 320 FMCG SMEs and two risk experts. The future studies must incorporate a larger sample size for both the survey of SME owner-managers and personal interviews with risk experts, to generate substantial data and for better generalisation of the findings. It is further suggested that both rural and urban-based FMCG SMEs be involved, to overcome the provincial imbalance of the current study. Thus, another fruitful avenue for future studies could be a comparative study between South African FMCG SMEs in urban and rural areas. The larger and diverse structure of the sample size is likely to accomplish more in-depth data regarding risk management of FMCG SMEs in South Africa.

DISCLOSURE OF CONFLICT

The authors declare that they have no conflicts of interest.

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FOCUS ON RESEARCH IN CONTEMPORARY ECONOMICS

ASYMMETRIC BEHAVIOR OF EXCHANGE RATE IN TUNISIA: A NONLINEAR APPROACH

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FOCUS ON RESEARCH IN CONTEMPORARY ECONOMICS

Submission date: 16.02.2021 | Acceptance date: 23.05.2021 RESEARCH ARTICLE

ASYMMETRIC BEHAVIOR OF EXCHANGE RATE IN TUNISIA: A NONLINEAR APPROACH

Wissem Boukraine*

ABSTRACT

This paper aims at analyzing Tunisia's exchange rate pass-through to inflation on quarterly data from 2011Q4 to 2019Q4. For this purpose we adopt a smooth transition autoregressive approach, this model enables us to distinguish two regimes and determine both the threshold and transition's speed between both regimes. Our results suggest the existence of significant short run causality among inflation, economic growth, real effective exchange rate and external debt growth. The non-linearity tests we conducted favors the logistic smooth transition autoregressive specification (LSTAR) which fits better the behavior of exchange rate pass-through to inflation in Tunisia during the last decade. We have also found that the exchange rate pass-through to inflation is high but slightly declines by switching from the first to the second regime when external debt reaches a certain threshold level, what rises concern is the rise in its volatility when the switch occurs. The policy recommendations derived from these findings are the inevitability of slowing down the external debt growth by mainly reducing government spending, increasing production and diversify exportation.

KEY WORDS: *Exchange Rate Pass-through, Regime Change, LSTAR, Tunisia*

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1. INTRODUCTION

According to Goldberg and Knetter (1997), exchange rate pass-through reflects a change in local currency import prices following a variation of the exchange rate between the exporting and the importing countries. These variations in import prices are passed on to producer and consumer prices. In the absence of fixed exchange rate, the latter affects not only aggregate demand but also aggregate supply as a channel of monetary policy. In fact, easing the monetary policy, can depreciate the exchange rate, increase the costs of imports in national currency, and consequently, push companies to raise prices. Besides,

since exchange rate volatility is seen as a signal of future inflation volatility, wages and prices can rise even before the costs of imports does. Such phenomenon is on one hand a major concern to emerging economies in general (Taylor, 2000), and a special concern for the Tunisian economy in particular as it is a key factor in understanding inflation dynamics and therefor in conducting monetary policy.

Convinced that exchange controls constitute a real handicap which affects the competitiveness and performance of the economy, the Tunisian monetary authorities, since 1987, have progressively liberalizing trade and relaxing exchange rate controls. Therefore, certain measures have been undertaken in order to allow certain flexibility in the management of firms that use imported products and to stimulate productivity gains and encourage local production in the face of to foreign competition. These measures were accompanied by the establishment of an institutional and regulatory framework in order to better take advantage of developments in the global economy. Before adopting price stability as its main goal in 2006, the Tunisian central bank perused many objectives at the same time via discretionary monetary policy. Among those objectives, it focused on preserving the competitiveness of the Tunisian economy by reducing the inflation gap relatively to the commercial partners, in that spirit, several adjustments of the nominal effective exchange rate were made. Recently, the shortage in foreign currencies reserves, the deficits of both the trade and the payment balances are among the main factors due to which the Tunisian national currency lost a great portion of its value during the last ten years. The International Monetary Fund, in its 2018 country report stated that public and external debt ratio in Tunisia represented respectively 70% and 80% of the county's gross domestic product. While both core and level inflation exceeded 7% year on year evolution following the continuous depreciation of the national currency. In such circumstances, a high debt ratio might lead to inflationary pressure, especially in emerging countries, as suggested by the economic literature. In fact, many of the authors who focused on the causality between debt and inflation confirm that debt growth was inflationary in many cases, such as in Malaysia (Tan, 2006), in India (Kannan and Singh, 2007), in Iran (Nouri and Samimi, 2011) and in Pakistan (Jalil, Tariq, and Bibi, 2014).

The impact of exchange rate on inflation has been largely studied for the Tunisian case mainly in linear context, and while important results and conclusions have been driven, still the nonlinear approach more appealing. For

the Tunisian case, some studies focus on the first stage pass-through of exchange rate into import and export prices at the aggregate or the disaggregated levels, other focus on the second stage pass-through of exchange rate into overall consumer or producer prices. This paper fit in the second group of studies, nevertheless, this work differs from its predecessors as it follow a nonlinear methodology based on the smooth transition autoregressive model. First we test for nonlinearity then we estimate the exchange rate pass-through to inflation and the impact of external debt growth on its behavior. The smooth transition autoregressive approach appeared initially in Bacon and Watts (1971), later on, the work of Teräsvirta (1994, 1998) enriched the model which gained more popularity in explaining fluctuations.

To our knowledge, this two regimes econometric procedure has never been applied, for the case of Tunisia. In fact we will not only determine the degree of exchange rate pass-through to inflation like previous works, but we will also analyze the effect of external debt evolution on its behavior. More precisely we will determine at which level of external debt the exchange rate switches between the two regimes and does this transition reduces or not its volatility. Taking into account the asymmetry of exchange rate via two regime model might give new insight for the conduct of monetary policy as the exchange rate is a monetary transmission channel. Knowing at which level of the threshold variable the switch between regimes occurs and the volatility associated with this transition becomes crucial.

The paper is organized as follows. In the second section, we will review the related literature, in the third section we will present the methodology, in the fourth section we will discuss the results, while in the fifth and last section we will conclude with remarks and policy recommendations.

2. LITERATURE REVIEW

The exchange rate determines the price of imported goods as well as inflation expectations and the competitiveness of domestic firms. But the capital flows induced by changes in the exchange rate can trigger credit and asset price bubbles. On the other hand, if the debts of companies or banks are largely denominated in foreign currencies and they are not equal to their holdings of foreign currencies, exchange rate depreciations can increase the debt burden and possibly forcing them into bankruptcy. For Sargent and Wallace (1981) a

rise in debt leads to inflationary pressure especially in highly indebted economies. Reinhart and Rogoff (2009) and Reinhart and Rogoff (2010) found a causality between debt and inflation in the emerging economies. These countries in particular struggles when it comes to external debt reimbursing as it drains their foreign currencies reserves and limits their central banks capability of defending the external value of their national currency.

The degree to which prices adjust to the exchange rate variations is necessary to understand inflation's dynamic and therefor to the conduct of monetary policy. The issue of exchange rate pass-through to inflation was considered by many authors for the Tunisian case especially in a linear context and their results are mainly an estimation of its degree. Abida and Sghaier (2012) found no evidence of a statistically significant nominal exchange rate pass-through to consumer or producer prices in Tunisia and morocco on both quarterly and annual data over the period 1980 to 2010. For the case of Tunisia the pass-through to consumer prices is about 0.238. Helali et al. (2014) on quarterly data from 1994 to 2010 found a short term exchange rate pass-through to inflation of about 15% for the year 1994 and 25% for the year 2010. They also found a long term exchange rate pass-through to inflation of 38% in 1994 and 60% for the year 2010. Guizani (2015) used a vector error correction model on Tunisian monthly data from 2000 to 2013 found a high exchange rate pass-through to consumer prices around 2011. Marrakchi Charfi and Kadria (2016) used a structural vector autoregressive model on monthly data from 2000 to 2013. The authors found a lower incomplete exchange rate pass-through to consumer prices than to import prices or to producer prices. The exchange rate pass-through to inflation was also approached in a nonlinear context for the Tunisian case but in rare occasions. Khemiri and Ben Ali (2013) using a Markov regime switching model for Tunisia on monthly data from 2001 to 2009, found evidence of two inflation regimes associated with low and high exchange rate pass-through to consumer prices.

By considering the exchange rate pass-through to inflation, the past works did not give much attention to external debt growth, mainly because it was not an issue back then, but lately things have changed since the external debt reached unprecedented levels in terms of GDP percentage. Therefore we find it necessary to include it in our estimation, not only to distinguish this work from its predecessors but also to determine its impact on the issue of exchange rate pass through to inflation.

3. METHODOLOGY

Our approach is nonlinear; in fact we use a smooth transition autoregressive model, in which our dependent variable, inflation, switches between two extreme and endogenously determined regimes. We estimate the exchange rate pass-through to inflation and the impact of external debt growth on its behavior via the following specification:

$$\begin{aligned}\pi_t &= \phi' z_t + \theta' z_t G(\gamma, c, s_t) + \varepsilon_t \\ &= \{\phi + \theta G(\gamma, c, s_t)\}' z_t + \varepsilon_t \end{aligned} \quad (1)$$

All data are quarterly, year on year evolution. π_t denotes inflation, $DEBT_t'$, denotes the external debt's, GDP_t' denotes the economic growth, $REER_t'$ denotes the real effective exchange rate.

Where $z_t = (w_t', DEBT_t', GDP_t', REER_t')'$ is a vector of explanatory variables; with $w_t' = \left(1, \pi_{t-1}, \ldots, \pi_{t-p}\right)'$, $DEBT_t' = (DEBT_{1t}, \ldots, DEBT_{kt})'$ $GDP_t' = (GDP_{1t}, \ldots, GDP_{kt})'$ and $REER_t' = (REER_{1t}, \ldots, REER_{kt})'$ vectors of exogenous variables and $\varepsilon_t \sim iid(0, \sigma^2)$.

While $G(\gamma, c, s_t)$ represents the transition function with γ and c the speed of transition and the threshold, respectively. The latter's value is determined, using model selection techniques, among several candidates variables for s_t. The estimations of the model's parameters, the threshold and the transition speed between regimes are done following nonlinear least squares method. The transition function is related to the model's specification which can vary from logistic (LSTR), normal (NSTR or STR), exponential (ESTR) or even logistic, second-order (L2STR). The choice between these specifications is conducted with the Teräsvirta (1994) linearity tests based on the first-order Taylor approximation.

4. RESULTS

Data, namely external debt growth, inflation, real effective exchange rate and economic growth measured by the gross domestic product's evolution, are retrieved from the Tunisian national institute of statistics, the Tunisian central

bank and the international monetary fund. Before estimating the exchange rate pass-through to inflation and the effect of external debt growth on its behavior, we find it necessary to test for stationarity, to determine the optimal lag length and to find short run causality.

Table 1. Unit root test in level and in first difference

	In level			In first difference		
	Intercept	Trend and intercept	None	Intercept	Trend and intercept	None
external debt	-1.94 (.31)	-2.99 (.15)	-0.13 (.63)	-5.68 (.00)	-5.72 (.00)	-5.53 (.00)
inflation	-1.20 (.66)	-1.54 (.79)	0.69 (.86)	-4.61 (.00)	-4.55 (.01)	-4.46 (.00)
real effective exchange rate	-0.43 (.89)	-1.17 (.90)	0.58 (0.84)	-3.28 (.03)	-3.71 (.04)	-3.32 (.00)
economic growth	-2.43 (.14)	-2.50 (.33)	-1.67 (.09)	-6.93 (.00)	-7.08 (.00)	-6.93 (.00)

Table 1 display the results of Phillips-Perron (1988) unit root test and prove the absence of stationary in level for every variable in the sample and suggest that they are all integrated of order one, with different level of significance, external debt growth and economic growth both at 1% level, while inflation and real effective exchange rate at 5% level. Next, in order to determine the lags to include in the smooth transition autoregressive estimation we follow the criteria in the table 2.

Table 2. Optimal lag length selection criteria results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-70.56	NA	16.8	5.66	5.80	5.70
1	-56.86	23.19*	6.34	4.68	4.88	4.74
2	-54.61	3.64	5.77*	4.59*	4.83*	4.65*
3	-54.08	0.81	6.00	4.62	4.91	4.70
4	-54.07	0.00	6.51	4.70	5.04	4.80

The criteria displayed in table 2, namely the final prediction error (FPE), the Akaike information criterion (AIC), the Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ) suggest that two is the optimal lag length which minimizes the log likelihood (LogL). Now the final step, before estimating the exchange rate pass-through to inflation and the effect of external debt growth on its behavior, is proving the existence of a short run cointegration between the sample's variables.

Table 3. Short run cointegration test

Null Hypothesis	F-Stat (p-value)	Null Hypothesis	F-Stat (p-value)
inflation does not cause real effective exchange rate	0.05 (.95)	real effective exchange rate does not cause inflation	3.22 (.06)
economic growth does not cause real effective exchange rate	0.08 (.92)	real effective exchange rate does not cause economic growth	0.06 (.95)
external debt does not cause real effective exchange rate	0.53 (.59)	real effective exchange rate does not cause external debt	0.48 (.62)
economic growth does not cause inflation	0.31 (.74)	inflation does not cause economic growth	0.25 (.79)
external debt does not cause inflation	1.79 (.19)	inflation does not cause external debt	0.68 (.52)
external debt does not cause economic growth	0.85 (.44)	economic growth does not cause external debt	2.35 (.12)

Table 3 present the results of the Granger (1969) causality test with two lags and prove the existence of short run cointegration for all variables at a 5% significance level. In order to estimate the smooth transition autoregressive model we must determine the value of the constant and the delay parameters.

According to Teräsvirta (1998) the delay parameter is chosen following the smallest p-value of the LM statistic.

Table 4. Linearity Tests

Null Hypothesis	F-statistic	p-value
$H04: b1 = b2 = b3 = b4 = 0$	20.44	0.00
$H03: b1 = b2 = b3 = 0$	20.44	0.00
$H02: b1 = b2 = 0$	20.44	0.00
$H01: b1 = 0$	2.10	0.12
	Terasvirta Sequential Tests	
$H3: b3 = 0$	20.19	0.00
$H2: b2 = 0 \mid b3 = 0$	20.19	0.00
$H1: b1 = 0 \mid b2 = b3 = 0$	2.10	0.12
	Escribano-Jorda Tests	
$H0L: b2 = b4 = 0$	1.79	0.40
$H0E: b1 = b3 = 0$	14.21	0.07

The Linearity tests results in table 4 prove that the logistic smooth transition autoregressive LSTAR is the appropriate specification for our model. In fact, tests using the third-order Taylor expansion $(b4 = 0)$ rejected the linear specification at 5% level using $H03$, and opted for the first-order logistic specification as $Pr(H3) \leq Pr(H2)$. The fourth-order Taylor expansion also rejected the linear specification at 5% level using $H04$ and opted for the first-order logistic specification with a nonzero threshold as $Pr(H0L) \geq Pr(H0E)$ with $Pr(H0E) \geq 0.05$. In order to avoid the serial correlation and the heteroskedasticity problems, we based our estimation on the HAC (Newey West) covariance method using observed Hessian.

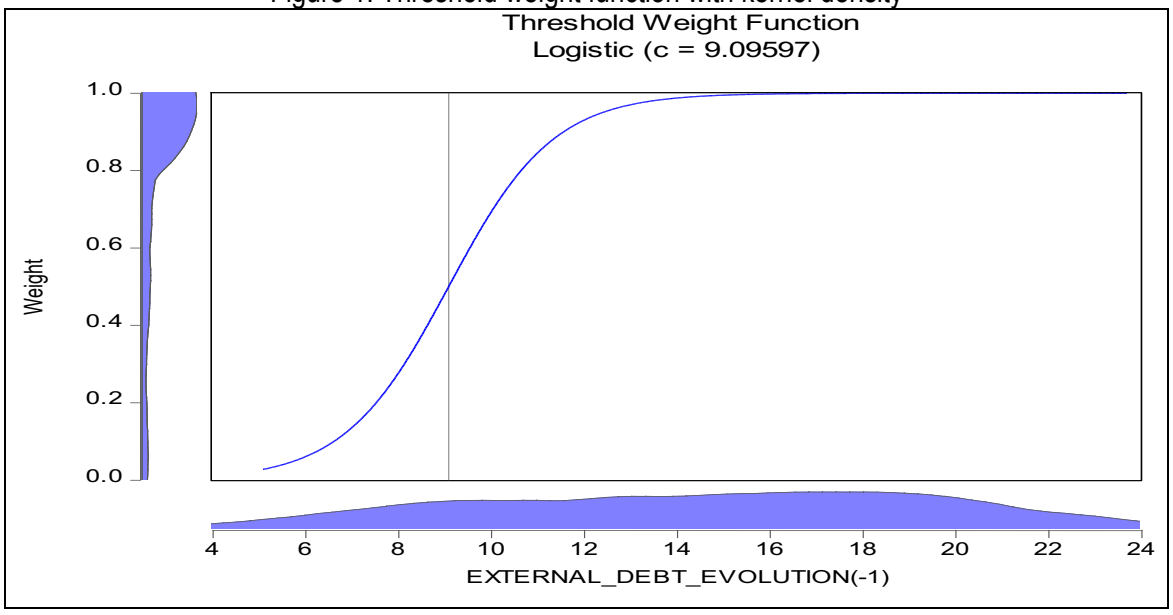
The result displayed in table 5 proves the existence of two regimes, linear and nonlinear, where the switch between them occurs via the threshold variable namely external debt growth's first lag at a significance level of 1% in each regime.

Table 5. Logistic smooth transition autoregressive estimation

Variable	Coefficient	Std. Error	t-statistic	p-value.
		Linear part		
economic growth	0.79	0.12	6.44	(.00)
external debt (-1)	0.94	0.09	10.36	(.00)
external debt (-2)	-0.58	0.05	-12.06	(.00)
real effective exchange rate (-1)	-0.74	0.11	-6.67	(.00)
		Nonlinear part		
economic growth	-0.35	0.21	-1.71	(.12)
external debt (-1)	-0.82	0.10	-8.20	(.00)
external debt (-2)	0.66	0.07	9.47	(.00)
real effective exchange rate (-1)	0.80	0.13	6.06	(.00)
SLOPE	0.89	0.24	3.74	(.00)
THRESHOLD	9.10	0.40	22.76	(.00)

The transition lag and the fluctuations in both regimes are determined according to the sum of squared residuals. The estimation results have an R-squared of 0.9 and an Adjusted R-squared of 0.79. The persistence level is determined by the sum of the threshold lag's coefficients in both regimes. The results of table 5 also confirm that the switch happens when external debt's growth reaches 9,1% as displayed in Figure 1.

Figure 1. Threshold weight function with kernel density



The parameter γ corresponding to the speed of transition from the first to the second regime equals ^{0,89}, while the persistence level is ^{0,11}, it is worth noticing that the second regime is characterized by a higher level of volatility with a sum of squared residuals of ^{0,51} compared to ^{0,37} in the first one. The pass-through is 94% in the first regime and 82% in the second regime. Our results are similar to those of Guizani (2015) who used a linear approach and found a high exchange rate pass-through to inflation since 2011. Never the less, our study proves that even if the exchange rate pass-through declines when switching from the first to the second regime, its volatility rises. This in turn creates uncertainty and has a negative impact on the economic performance. In fact, during the period on which we consider, Tunisia experienced higher inflation and lower economic growth following the sporadic evolution of both investment and exportation, despite the multiple central bank interventions to end the recession.

5. CONCLUSION

During the last decade the Tunisian economy experienced high levels of inflation following both the depreciation of its national currency and the unprecedented external debt growth. In this paper we used quarterly data for the period 2011Q4 to 2019Q4 in order to test for asymmetry in the exchange rate and to estimate its pass-through to inflation in Tunisia and how external debt affect its behavior, using a smooth transition autoregressive procedure. The Granger test we conducted suggested causality at 5% level of significance among the sample variables. The non-linearity tests confirmed that the logistic smooth transition autoregressive specification is the appropriate specification in our case. Our main findings are the existence of a high pass-through in both regimes, but when the transition happen volatility raises considerably, the transition starts at a growth of 9.1% in external debt. The policy recommendations derived from these findings are the inevitability of slowing down the external debt growth, as the rise of exchange rate volatility threatens the economy, by mainly reducing government spending, which grew considerably since 2011, and by increasing both production and exportation to raise the necessary financial resources to pay off the debt.

DISCLOSURE OF CONFLICT

The author declares that he has no conflicts of interest.

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FORCE

FOCUS ON RESEARCH IN CONTEMPORARY ECONOMICS

GEOMETRIC BROWNIAN MOTION APPROACH TO MODELLING STOCK PRICES

Cigdem Topcu Guloksuz

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GEOMETRIC BROWNIAN MOTION TO MODELLING STOCK PRICES

Cigdem Topcu Guloksuz*

ABSTRACT

The aim of this study is to revisit the practicability of geometric Brownian motion to modelling of stock prices. Random walk process is extended to the geometric Brownian motion model and its mathematical properties are discussed. The historical data set referring the stock prices of Walmart Company from 16 March 2019 to 13 March 2020 is employed to present the accuracy of the predicted prices, which are generated based on the geometric Brownian motion model. The results display that the geometric Brownian motion model provides accurate predictions.

KEY WORDS: *Random Walk, Brownian Motion, Geometric Brownian Motion, Ito's Lemma, Stock Prices*

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1. INTRODUCTION

A stock market refers to a platform which consists of buyers and sellers who trade the financial securities such as stocks/equities, bonds, currencies under set of regulations. When the case is to make profit from the financial activities, modelling the price movements properly becomes an important task to be able get accurate predictions of the prices. The mixed ARMA (p,q)+GARCH(r,s) time series models, the stochastic process can be considered as models for the stock prices. In this study geometric Brownian motion is mainly studied. There are many studies in literature about modelling stock prices with stochastic process, Reddy and Clinton (2016), Almgren (2002), Malliaris (1983). Additionally, several studies in which the geometric Brownian motion is employed as a statistical model of stock prices. For example, Yang (2015) explores some techniques to build financial model using Brownian Motion and Rajpal (2018)

considers the Geometric Brownian Motion as a statistical model to predict the Apple's stock price. Azizaha et.al. (2020) compare the performances of the Geometric Brownian Motion and multilayer perceptron for stock price predictions and find that the Geometric Brownian Motion provides more accurate results.

The organization of the paper is as follows: Section 1 introduces the random walk process, Brownian motion and their properties. In Section 2, Geometric Brownian motion is revisited as a stochastic differential equation and the solution of the equation is linked to the predicted future returns. A small application study is conducted in Section 3. The paper is concluded in Conclusion.

2. A BIREF OVERVIEW FOR RANDOM WALK AND BROWNIAN METHOD

A random walk is a path which consists of a set of random steps. The start point is zero and following movement may be one step to the left or to the right with equal probability. In the random walk process, there is no observable trend or pattern which are followed by the objects that is the movements are completely random. That is why the prices of a stock as it moves up and down can be modelled by random a walk process.

Let X_i denotes the ith step and takes – 1 and 1 values with equal probability of $\frac{1}{2}$. The start position is set to zero, $W^{(1)}(0)=0$, then the random walk describes the position at time t or after n steps as follows:

$$W^{(1)}(n)=S_n \tag{1}$$

where $S_n=\sum_{i=1}^{n}X_i$.

Here, X is a Bernoulli random variable as follows

$$X_i=\begin{cases}-1, & p=1/2\\ 1, & p=1/2\end{cases} \tag{2}$$

and the expectation and variance of the random walk is

$$E[W^1(t)]=0 \tag{3}$$

$$Var[W^1(t)] = t \quad (4)$$

Considering the central limit theorem, $n \to \infty$ $W^{(1)}(n) \approx N(0,n)$. It is also note that since one step is taken in one unit time, $W^{(1)}(n) \approx N(0,n)$ and $W^{(1)}(t) \approx N(0,t)$ have same meaning. Figure 1 illustrates an example of a random walk process.

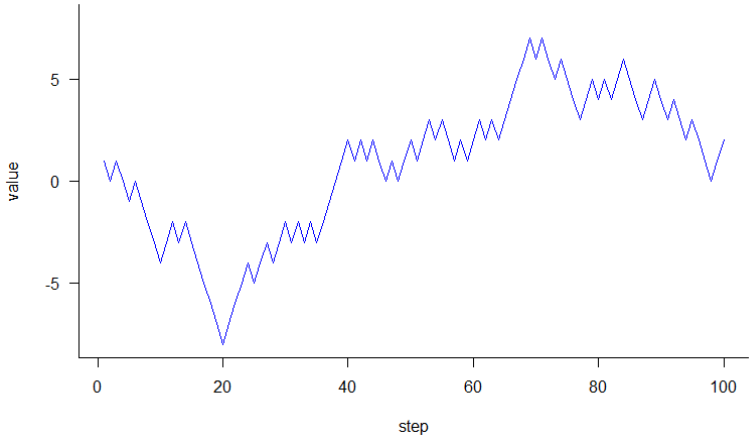

Figure 1: Random Walk with 100 steps in time

For the random walk denoted by $W^1(t)$, it is considered that on step is taken in every unit time. It is possible to consider finer random walk process, represented by $W^k(t)$, in which k steps are taken in each unit of time and the total steps in the random walk is $n = kt$. However, when k grows the variance of the position at time t will be k times larger than the simple random walk process, $W^1(t)$. It means that $W^k(t)$ does not have the desired random walk properties. Recalling the Bernoulli variable in (2), the variance of the $W^k(t)$ is as follows.

$$Var\left[W^{(k)}(t)\right] = Var\left[\sum_{i=1}^{n=kt} X_i\right] = kt \quad (5)$$

To keep the variance constant as in (4), it is needed to rescale the length of step.

$$Y_i = \frac{1}{\sqrt{k}} X_i \tag{6}$$

Then, a general form and the variance of the scaled random walk are obtained in (7) and (8), respectively.

$$W^k(t) = \frac{1}{\sqrt{k}} \sum_{i=1}^{kt} X_i \tag{7}$$

$$Var\left[W^k(t)\right] = Var\left[\frac{1}{\sqrt{k}} \sum_{i=1}^{kt} X_i\right] = t \tag{8}$$

The general properties of the scaled random walk are listed below:

1. Independent increments: for $0 < s < t < l < k$ $W^{(k)}(t) - W^{(k)}(s)$ and $W^{(k)}(k) - W^{(k)}(l)$ are independent.
2. $E[W^{(k)}(t)] = 0$, $Var\left[W^{(k)}(t)\right] = t$
3. $k \to \infty$ $W^{(k)}(t) \approx N(0,t)$.

3. STOCK PRICES AND GEOMETRIC BROWNIAN METHOD

Brownian motion which is firstly realized by the botanist Robert Brown. It is a mathematical model to describe random movements of small particles in a fluid or gas. These random movements are observed in the stock markets where the prices move up and down, randomly. Hence Brownian motion is considered as a mathematical model for stock prices.

A linear function of scaled random walk, $W^k(t)$, with drift, μ, and diffusion coefficient, σ, can defined as follows:

$$B_t^{(k)} = \mu t + \sigma W_t^{(k)} \tag{9}$$

As $k \to \infty$ real valued $\{B(t) : t \geq 0\}$ process is obtained

$$B_t = \mu t + \sigma W_t \tag{10}$$

and has the following properties:

1. For $0 \le s < t$, the increment, $B(t+s) - B(s) \sim N(0,t)$.
2. B_t has independent increments.
3. B_t is continuous.

B_t is called Brownian motion with drift μ and diffusion coefficient σ. The version with $\mu = 0$ and $\sigma = 1$ is called standard Brownian motion or *Wiener* process and denoted by W_t. It should be noted that W_t can be defined as

$$W_t = \varepsilon\sqrt{t} \tag{11}$$

where $\varepsilon \sim N(0,1)$. The Brownian motion, B_t with drift is normally distributed with following expectation and variance.

$$E(B_t) = E(\mu t + \sigma W_t) = \mu t \tag{12}$$

$$Var(B_t) = Var(\mu t + \sigma W_t) = \sigma^2 t \tag{13}$$

Figure 2 illustrates simulated Brownian motions with positive and negative drift, respectively.

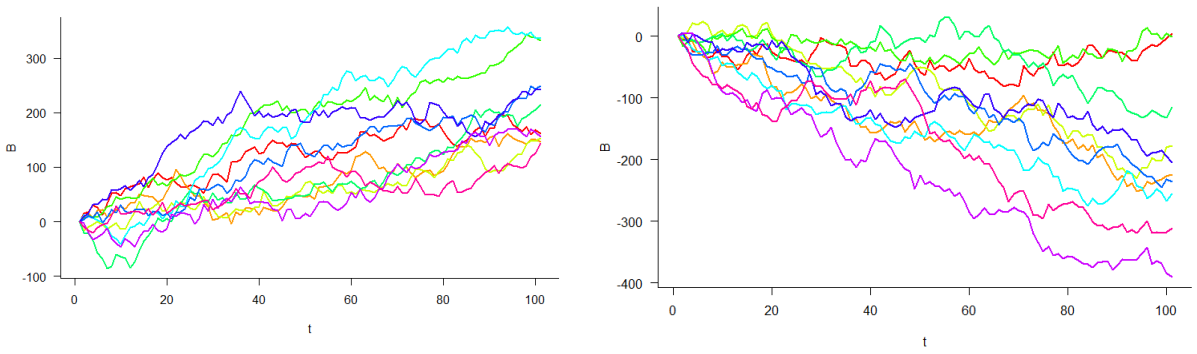

Figure 2: Brownian Motion with positve and negative drift

Commonly researchers are interested in modelling returns instead of price itself (Dhesi et al., 2016). A return is a percentage which represent the change of prices. According to Campbell, Lo, and MacKinlay (1997), there are two main

reasons for using returns instead of prices themselves. The returns are scale free, and it is easier to work with returns than prices themselves.

Let S_t denotes the price at time t and μ is expected rate of return. The return or relative change in price during the time of dt can be defined as

$$dS_t = \mu S_t dt + \sigma S_t dB_t \tag{14}$$

$$\frac{dS_t}{S_t} = \mu dt + \sigma dB_t \tag{15}$$

The daily return in (14) is a stochastic differential equation (SDE) with Brownian motion with drift has two parts which one is predictable and the other one is unpredictable. $\mu S_t dt$ represents the predictable part of the return and $\sigma S_t dB_t$ represents the unexpected part. The equation in (15) defines the rate which follows an Ito's process. All intervals with the length dt, the rate can be defined as

$$\frac{dS_t}{S_t} = d(\ln S_t) = \ln S_t - \ln S_{t-1} = \mu dt + \sigma dB_t \tag{16}$$

Now there is a proposed model for the daily return and the goal is to obtain S_t. It means that to find the solution of the stochastic differential equation given by (15). To find the solution of the SDE in (15), Ito's formula is applied.

Ito's lemma:

If $\{X_t, t \geq 0\}$ is an Ito process;

$$dX_t = \mu(X_t, t)dt + \sigma(X_t, t)dW_t \tag{17}$$

$$X_t : Y_t = g(X_t) \tag{18}$$

$$\partial Y_t = \partial g(X_t) = \left[\frac{\partial g(X_t)}{\partial X} \mu(X_t, t) + \frac{1}{2} \frac{\partial^2 g(X_t)}{\partial X} \sigma^2(X_t, t) \right] dt + \frac{\partial g(X_t)}{\partial X} \sigma(X_t, t) dW_t \tag{19}$$

The following substitutions are inserted to the Ito's formula in (17)

$$Y_t = \ln S_t;\quad X_t \to S_t;\ \mu(X_t,t) = \mu S_t;\ \sigma(X_t,t) = \sigma S_t$$

and the following equations are obtained.

$$d\ln S_t = \left(\frac{1}{S_t}\mu S_t + \frac{1}{2}\left(-\frac{1}{S_t^2}\right)\sigma^2 S_t^2\right)dt + \frac{1}{S_t}\sigma S_t dW_t \tag{20}$$

$$d\ln S_t = \left(\mu - \frac{1}{2}\sigma^2\right)dt + \sigma dW_t \tag{21}$$

Recalling (10) and (16)

$$d\ln S_t = \ln S_t - \ln S_{t-1} = \left(\mu - \frac{1}{2}\sigma^2\right)dt + \sigma\varepsilon\sqrt{dt} \tag{22}$$

Here, $\varepsilon\sqrt{dt}$ is a random walk and $d\ln S_t$ is Brownian motion with drift and

$$d\ln S_t \sim N\left(\left(\mu - \frac{1}{2}\sigma^2\right)dt, \sigma^2 dt\right) \tag{23}$$

$$\ln S_t = \ln S_{t-1} + \left(\mu - \frac{1}{2}\sigma^2\right)dt + \sigma\varepsilon\sqrt{dt} \tag{24}$$

Finally, the solution of the SDE in (15) is obtained and it is a geometric Brownian motion model for the future stock price.

$$S_t = e^{\ln S_{t-1}} e^{\left(\mu - \frac{1}{2}\sigma^2\right)dt + \sigma\varepsilon\sqrt{dt}} \tag{25}$$

The estimations of μ and σ are calculated from the data. The daily return is calculated as follows:

$$x_i = \ln\left(\frac{S_i}{S_{i-1}}\right),\ i = 1,2,...,n \tag{26}$$

The drift and volatility of daily returns are calculated by using (26) and (27), respectively.

$$\hat{\mu} = \frac{\bar{x}}{\Delta t} + \frac{1}{2}\sigma^2 \tag{27}$$

Here, Δt represents the length of consecutive time periods.

$$\hat{\sigma} = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2} \tag{28}$$

Considering the (23) , %95 confidence interval of S_t can be constructed.

$$P\left(e^{\ln S_0 + \left(\mu - \frac{1}{2}\sigma^2\right)t - z_{0.05}\sigma\sqrt{t}} \le S_t \le e^{\ln S_0 + \left(\mu - \frac{1}{2}\sigma^2\right)t + z_{0.05}\sigma\sqrt{t}} \right) = 0.95 \tag{29}$$

4. APPLICATION STUDY

In this section, an historical data set which consists of daily closing prices stock from 16 March 2019-13 March 2020 of Walmart Company stock is considered and generated series of future closing prices based on the Geometric Brownian motion model in (25). The historical data set is obtained from the web site of Yahoo Finance. Considering the benefits of working with daily returns the daily returns of the data are obtained (26). Figure 3 illustrates the closing stock prices and the histogram of the daily returns.

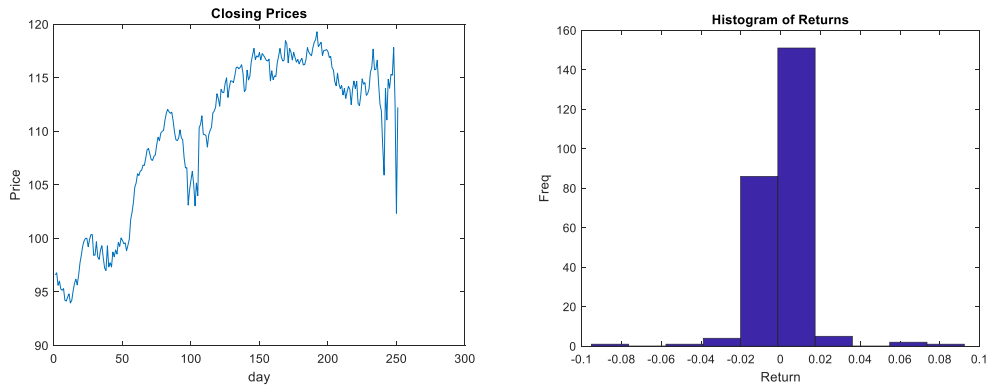

Figure 3. The graphs of closing stocks prices and daily returns.

Geometric Brownian motion is considered as an appropriate model for the prices. The drift and volatility are estimated from data and based on (25) 1000

stock prices are simulated. The average of the simulated values is calculated and %95 confidence interval of the mean of the prices, under the assumption of normality, is estimated. As an actual value the closing price of the first following day which is 16 March 2020 of the studied stock is considered and checked whether the estimated confidence interval covers the actual value. The results are listed in Table 1.

Table1: The Simulation Results

Average Simulated Expected Prices	%95 Confidence Interval	Actual Value (16.03.2020)
104.56	104.26-105.54	105.01

According to the results in Table 1, geometric Brownian motion model provides accurate predictions, which are considered to estimate confidence interval of the actual stock price.

5. CONCLUSION

Developing statistical models which provide accurate predictions for future stock prices, is studied by various researchers. In this study, geometric Brownian motion model is revisited to modelling stock prices. Basics of random walk process and the brief definition of the geometric Brownian motion are summarized. The theory behind the idea of modelling stock prices with geometric Brownian motion is discussed. A small study is conducted to present that the geometric Brownian motion is an appropriate model for stock prices, which yields accurate predictions.

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FOCUS ON RESEARCH IN CONTEMPORARY ECONOMICS

THE MEDIATING ROLE OF JOB SATISFACTION BETWEEN PERCEIVED ORGANIZATIONAL SUPPORT AND ORGANIZATIONAL COMMITMENT: A RESEARCH IN LOGISTICS INDUSTRY

Karahan Kara, & Polat Yücekaya

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FOCUS ON RESEARCH IN CONTEMPORARY ECONOMICS

Submission date: 09.05.2021 | Acceptance date: 18.05.2021 RESEARCH ARTICLE

THE MEDIATING ROLE OF JOB SATISFACTION BETWEEN PERCEIVED ORGANIZATIONAL SUPPORT AND ORGANIZATIONAL COMMITMENT: A RESEARCH IN LOGISTICS INDUSTRY

Karahan Kara & Polat Yücekaya*

ABSTRACT

The aim of this study is to determine the mediating role of job satisfaction in the effect of perceived organizational support on organizational commitment. For this purpose, data were collected from 363 employees working in logistics companies in Bursa, Balıkesir and Çanakkale by applying a questionnaire in January 2021. The convenience sampling method was used in this study. Within the scope of the research, job satisfaction scale developed by Chen et al. (2009), perceived organizational support scale developed by Eisenberger et al. (1986) and the organizational commitment scale developed by Meyer et al (1993) were used. Frequency analysis, validity and reliability analysis, confirmatory factor analysis and path model analysis were performed with the data set based on the collected data. According to the analysis results, it was determined that perceived organizational support positively affected organizational commitment, and job satisfaction had a full mediating effect between perceived organizational support and organizational commitment.

KEY WORDS: *Job Satisfaction, Organizational Commitment, Perceived Organizational Support, Mediation Role, Logistics Industry*

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1. INTRODUCTION

All of the resources owned by organizations are important for the organization, but human resources are the most valuable of these resources. For businesses

to perform efficient, productive and profitable activities, the performance of their human resources should be increased. Perceived organizational support, organizational commitment, and job satisfaction, which are directly related to human resources practices, are discussed in this study. Employees' feeling that they are supported by other elements of the organization they belong to is conceptualized with the concept of perceived organizational support. Perceived organizational support increases depending on factors such as employee development opportunities, job security, flexible working programs, training opportunities, wages, and promotion (Eisenberger et al., 1997; Kurtessis et al., 2015). However, situations such as excessive workload, role ambiguity, and role conflict negatively affect perceived organizational support (Rhoades & Esinberger, 2002).

Job satisfaction is considered as all positive perceptions of individuals towards the job (Locke, 1976). In the literature, many definitions have been made in terms of defining the concept of job satisfaction. When the literature is examined, it is seen that there are many different definitions for explaining the concept of job satisfaction (Locke, 1976; Cano & Miller, 1992; Davis, 2004). The common point of the definitions of the concept of job satisfaction is that the job is a source of happiness and contentment for the individual. It is a natural result that individuals with high job satisfaction and contentment make more efforts towards the goals of the organization. For this reason, an organization consisting of employees with high job satisfaction increases the chance of success.

The concept of Organizational Commitment has been included in the literature since the 1950s (Becker, 1960; Gouldner, 1960). It has the characteristic of being a subject that continues to be researched since that date. Researchers have made different definitions and classifications on organizational commitment as well as job satisfaction. Meyer and Allen (1991:67) define organizational commitment as "commitment is a psychological state that (a) characterizes the employee’s relationship with the organization, and (b) has implications for the decision to continue or discontinue membership in the organization." On the other hand, Mowday et al. (1982) defines organizational commitment as the criteria for identification with the organization and participation in the organization. In addition, employees with high organizational commitment act in line with organizational goals by showing more productive, responsible and high performance (Organ & Ryan, 1995).

In this study, the effect of perceived organizational support on organizational commitment and the mediating role of job satisfaction in the effect of perceived organizational support on organizational commitment are examined. This research consists of three parts. In the first part, the conceptual framework for the variables was drawn, and the hypotheses were created by reviewing the literature. The second part is the method part, and it includes information about the research model, purpose, scope and limitations, and scales used in the research. In the third part, the data collected for the research were analyzed and hypothesis tests were carried out.

2. CONCEPTUAL FRAMEWORK

2.1. Perceived organizational support

Organizational support theory explains the relationship between the values possessed by individuals with various roles within the organization and the organization's respect for these values (Eisenberg et al., 1986). To increase the efficiency and productivity of employees in the work environment, various responsibilities are imposed on both the organization and the employees in ensuring organization-individual value harmony. At this point, organizational support is associated with the value the organization gives to its employees. Social interaction theory explains that the change in value that occurs because of the interaction between employees and employers or managers in a social environment based on the expectation of mutual benefit between individuals will result in emotional and financial gains (Emerson, 1976). Leader-member interaction theory is based on the realization of organizational interests in terms of organizational support on the successful achievement of harmony and mutual expectations in the vertical bilateral relations of leaders with employees (Dansereau et al., 1975).

Organizations expect employees to add value to the organization, and simultaneously, employees expect value and support from the organization to achieve their goals. This mutual expectation is explained by the "reciprocity norm" between the parties (Rhoades & Eisenberger, 2002). The reciprocity norm is based on psychological agreement (Aselage & Eisenberg, 2003). In a reciprocal relationship, organizations expect their employees to have a sense of belonging to the organization, and employees expect organizational support from the organization and their managers. Perception of organizational support offered to employees by managers contributed to the emergence of the

perceived organizational support concept. Perceived organizational support is the level of believing that the organization of which they are a member will support them in case of need in order for employees to achieve successful outcomes in the work environment and to cope with stressful situations they encounter (George et al., 1993). Eisenberg et al. (1986) explained the concept of perceived organizational support as the level of social, psychological, and emotional satisfaction of the employees, the level of importance of the employee within the organization, and the individual's belief and feeling of the value of the organization.

Rhoades and Eisenberg (2002) identified the forerunners of perceived organizational support as justice, management support, employee characteristics, organizational reward and work conditions. The premise of justice has been examined by taking both structural justice and social justice dimensions together. Within the scope of the organizational reward and business conditions premise, the size of the organization, the role of stress factors, job security, education, autonomy, recognition, payment, and promotion dimensions are discussed. Employee traits, on the other hand, are among the forerunners of perceived organizational support, including employee personality traits and demographic features. Rhoades and Eisenberg (2002) have found the successors of perceived organizational support as organizational commitment, job participation, performance, desire to stay at work, work-based influence, withdrawal behavior and tensions. Kraimer and Wayne (2004) has revealed the dimensions that constitute perceived organizational support. These dimensions are the support of organizations to adapt to the work conditions of the employees, career support to meet the professional career expectations of the employees, and the financial support that the employees expect financially for their efforts.

For the organizational support to be successfully provided within the organization and to be fully felt by the employees, the organization must act as a whole. Within an integrated organizational structure, all stakeholders of the organization contribute to the formation of perceived organizational support and show a common attitude. This common attitude directly affects the perceived organizational support levels of employees (Shore & Tetrick, 1991: 638). Individuals with a high perceived level of organizational support are expected to have a high contribution to the organization (Sears et al., 2016). In organizations with employees with low level of organizational support, it is expected that

organizational commitment will decrease, and low output will be obtained in the performance of the employees.

2.2 Organizational commitment

The side-bet theory explains the concept of commitment as the individuals within a certain organizational structure feel themselves connected to the organization, thinking that they will lose their gains due to their presence in the organization (Becker, 1960). Becker considered the concept of organizational commitment together with the intention to quit and showed that the main factor affecting the intention to quit was the level of organizational commitment. The psychological attachment approach deals with commitment by highlighting the psychological gains arising from the participation of individuals within the organization instead of the concrete gains suggested by the side gains theory (Porter, 1974). In this approach, to talk about organizational commitment, it is expected that the values and goals of the organizations are accepted and adopted by the employees, the willingness to make efforts for the organization, the desire to ensure the continuity of the organization's membership (Mowday et al., 1979: 226).

In the attitudinal commitment approach, Meyer and Allen (1997) suggested that organizational commitment cannot be evaluated under a single dimension, and that organizational commitment should be addressed in three dimensions: affective, continuance and normative. The affective dimension is based on the formation of an emotional bond between the organization and the employee based on the positive experiences of the employees in the organization. The continuance dimension explains the relationship based on the economic and social costs that should be incurred in the event that employees leave the organization. Normative commitment, on the other hand, refers to the commitment of the employees to the organization based on the principle of reciprocity. Meyer et al. (2002) suggested that the sub-dimensions of organizational commitment will have consequences on the intention to leave and turnover of the workforce, work behavior, and the health and well-being of employees. O'Reilly and Chatman (1986), which is among the multi-dimensional approaches, discusses organizational commitment in three dimensions: adaptation, identification, and internalization. The adaptation dimension explains the employees' acceptance and compliance with the norms and orders of the organization to attain the determined awards. Identification dimension is expressed as employees' adoption of the organization's goals and objectives

and establishing close relationships with other organization members to act in this direction. The internalization dimension is the individual accepting and defending organizational values as their own.

The organizational commitment levels of the employees are accepted in three levels as low, moderate and high (Randal, 1987). Employees with low levels of organizational commitment feel obliged, although they do not fully internalize the values of the organization. Meyer and Alen (1991) argue that individuals with a low level of organizational commitment pressure them to stay in the organization, so that they can only realize the continuity dimension of organizational commitment. Employees who have a moderate level of organizational commitment also feel obliged to the organization. Thus, both continuity and normative dimensions of organizational commitment are realized. At the high level of commitment, which is the desired level of organizational commitment, an emotional bond is created between individuals and the organization, and all the continuity, normative and emotional dimensions of organizational commitment are achieved. Reichers (1985) explained the antecedents that affect the formation of organizational commitment as demographic characteristics, job satisfaction, need for satisfaction, group norms, rewarding, job stress, management relations, need for safety, job choice, need to succeed, employee-job fit and job characteristics. It has revealed that the successors of organizational commitment are job absenteeism, turnover, performance, job satisfaction and job delay. In addition, in recent studies in the literature, it is seen that the relationship between perceived organizational support and organizational commitment is examined (Kaplan & Öğüt, 2012; Üren & Çorbacıoğlu, 2012; Özdevecioğlu, 2013; Taştan et. al., 2014; Sökmen & Ekmekcioğlu, 2016; Güngör & İlişen, 2018; Diken et.al., 2019; Özgül et. al., 2020). It is expected that there will be a significant relationship between organizational support perceived as the ultimate and organizational commitment.

2.3. Job satisfaction

Job satisfaction is extremely important for organizations to make the most efficient use of their human resources (Davis, 1982; Parnell & Crandall, 2003). Locke (1976) defines job satisfaction as positive feelings and attitudes towards work. Erdoğan (1996), on the other hand, explains the concept of job satisfaction as the sum of the positive feelings an individual shows towards the job.

According to another definition, job satisfaction is expressed as the happiness of the employee because of the harmony between the individual characteristics and the job characteristics, as well as the positive attitude felt towards the job (Ugboro & Obeng, 2000). Hackman and Oldham (1974) explained job satisfaction as an individual's satisfaction from their job. The concepts of job satisfaction and job dissatisfaction directly affect employee performance. Employees are expected to be satisfied with their job when they are treated fairly in business implementation processes and results, but otherwise, job dissatisfaction is likely to be encountered. As job satisfaction is important for the success of the organization, the transformation of job satisfaction into dissatisfaction is one of the most important obstacles in the success of the organization.

2.4. Perceived organizational support, organizational commitment and job satisfaction

There are many studies in the literature examining the relationship between organizational support and organizational commitment. To create the hypothesis supports that we have created within the scope of research, the literature was reviewed and the studies in the literature were conveyed. In a study conducted by Allen (1992) on 244 university employees, it was concluded that perceived organizational support has a mediating effect on the relationship between communication and commitment levels among colleagues. Shore and Wayne (1993) collected data from 383 employees and managers in their study, in which they examined the effect of perceived organizational support, continuance commitment and affective commitment on employees' organizational citizenship and impression management. According to the results of statistical analysis, perceived organizational support and affective commitment positively affect employee behavior, and continuance commitment negatively. In the study, which examined the relationship between perceived organizational support levels and continuance and affective commitment of milk production workers in New Zealand and Ireland, it has been found that there was a negative relationship between perceived organizational support and continuance commitment, and a positive significant relationship with affective commitment (O'Driscoll & Randall, 1999). According to the hierarchical regression results in the study based on data collected from 337 people working in three different organizations operating in the Southern California region, it has been found that goal setting and feedback had a significant effect on perceived organizational support in the first model. In the second model, perceived

organizational support has been significant on organizational commitment, and in the model created by the inclusion of goal setting and feedback, perceived organizational support has been found to be significant, while goal setting and feedback has been not significant. In the third model, it has been became meaningful with the inclusion of perceived organizational support to the non-significant effect of goal setting and feedback on organizational commitment (Hutchison & Garstka, 1996).

In a study conducted by La Mastro (1999) on primary and secondary school teachers, it was found that teachers had a strong positive correlation between perceived organizational support levels and affective organizational commitment, a negative correlation with continuance organizational commitment, and a positive correlation with normative commitment. In the study conducted by Özdevecioğlu (2003) on 412 people working in five furniture companies operating in the Kayseri region, the relationship between perceived organizational support and organizational commitment has been examined. When the findings of the study are examined, it is concluded that there is a significant relationship between perceived organizational support and normative, continuance and affective organizational commitment. In the study conducted by Aube et al. (2007) based on data collected from 249 prison workers, the relationship between perceived organizational support and organizational commitment and the mediating effect of locus of control and work autonomy in this relationship has been examined. When the findings of the study are examined, it is seen that there is a positive significant relationship between perceived organizational support and affective and normative organizational commitment dimensions. In addition, according to the results of hierarchical multiple regression analysis, it has been concluded that locus of control and study autonomy have a mediator effect between perceived organizational support and affective commitment. Aggarwal-Gupta et al. (2010) have found that perceived organizational support significantly affected all sub-dimensions of organizational commitment (affective and normative organizational commitment) in their study on 513 personnel working in two major Indian manufacturing companies. In the study, which examined the relationship between perceived organizational support and sub-dimensions of organizational commitment of 413 personnel working in hotel enterprises operating in Nevşehir province, it has been found that there was a positive significant relationship between perceived organizational support and normative and affective commitment, and a negative relationship with continuance commitment (Kaplan

& Öğüt, 2012). Muhammad (2014) collected data from 261 employees in his study at 9 Kuwait business organizations. it is seen that there is a positive relationship between perceived organizational support and affective commitment, and perceived organizational support has a mediating effect between affective commitment and organizational citizenship. In the study examining the relationship between perceived organizational support and affective organizational support of 212 teachers working in Giresun province, it has been explained that the teachers' perceived organizational support levels were positively correlated with their affective commitment (Uzun, 2018).

In addition, many studies have found a positive relationship between organizational commitment and job satisfaction (Çelen et al., 2013; Top, 2012; Karakaş & Güleş, 2010; Rifai, 2005; Özkalp, 2004; Testa, 2001). There are studies in the literature that there is a positive and significant relationship between perceived organizational support and job satisfaction (Cropanzano et al., 1997; Galletta et al., 2016; Shore & Tetrick, 1991), and the role of organizational support in the relationship between job satisfaction and organizational commitment (Sevinç Altaş, 2019; Özdevecioğlu, 2003).

Considering the studies examining the relationship between perceived organizational support and organizational commitment, H1 hypothesis was established to explain the relationship between perceived organizational support and organizational commitment of personnel working in the logistics sector. H2 hypothesis was established to determine the mediator role of job satisfaction in the relationship between perceived organizational support and organizational commitment. The hypotheses formed are as follows:

H1: Perceived organizational support has a significant positive effect on organizational commitment in logistics companies.

H2: Job satisfaction has a mediating role in the relationship between perceived organizational support and organizational commitment.

3. METHODOLOGY

3. 1. Research model

Two research models were created to test the hypotheses presented in a conceptual framework. Our first research model was created to explain the

relationship between perceived organizational support and organizational commitment. The second research model was created to explain the mediating relationship of job satisfaction between perceived organizational support and organizational commitment. The research models created are presented in Figure 1.

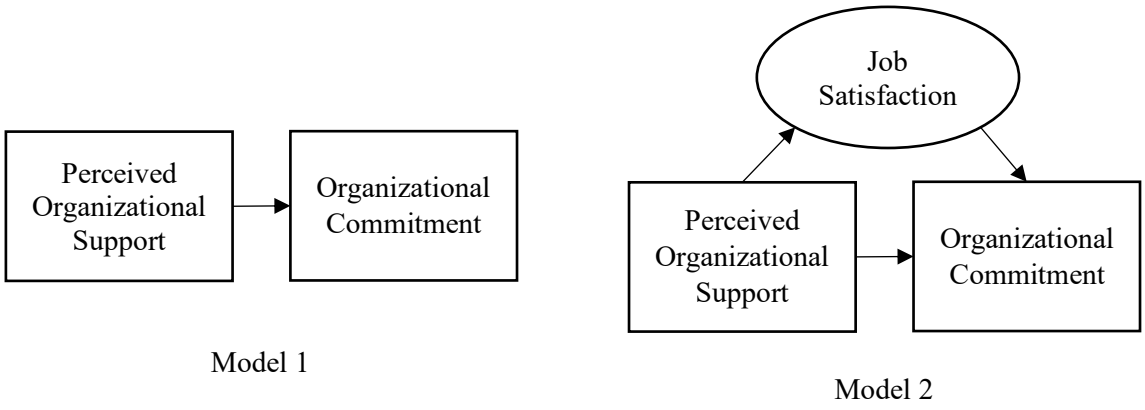

Figure 1: Research models

3.2. Research sample and research scales

The purpose of this study is to determine the mediating role of perceived organizational support in the effect of job satisfaction on organizational commitment. For this purpose, data were collected from 363 employees working in logistics companies operating in Bursa, Balıkesir and Çanakkale provinces by applying a questionnaire in January 2021. The convenience sampling method was used in this study. In the questionnaire, three scales were used in his research. These are job satisfaction scale, perceived organizational support scale and organizational commitment scale. The job satisfaction scale is a 5-statement scale developed by Chen et al. (2009). The perceived organizational support scale is an 8-statement version of the scale developed by Eisenberger et al. (1986) with 36 statements. Organizational commitment scale is a scale consisting of 18 statements developed by Meyer et al. (1993). The scales used are 5-Likert type. This research is limited to the scales used in the questionnaire, and it is assumed that the scales are sufficient to measure what is intended to be measured. Other constraints of the research are time and cost constraints.

4. FINDINGS AND DISCUSSION

4.1. Demographic findings

In this section, information about the demographic characteristics of the

participants, which is the source of the research data, is shown in Table 1. When Table 1 is examined, 73.3% of the participants are male and 26.7% are female employees. 68% of the participants are married and 32% are single. 35.5% of the participants are 18-30 years old, 32.2% are 31-40 years old, 21.8% are 41-50 years old, 10.5% are 50 and over. When the educational status of the participants is examined, 23.7% are high school and below education level, 29.5% are associate degree graduates, 42.1% are master's and 4.7% are doctorate graduates.

Table 1. Descriptive findings of the sample

Gender	Number	%	Marital Status	Number	%
Woman	97	26.7	Married	247	68.0
Man	266	73.3	Single	116	32.0
Total	363	100	Total	363	100
Age	**Number**	**%**	**Education Status**	**Number**	**%**
18-30	129	35.5	Pre-high school and high school	86	23.7
31-40	117	32.2	Associate degree	107	29.5
41-50	79	21.8	Undergraduate	153	42.1
50 +	38	10.5	Postgraduate	17	4.7
Total	363	100	Total	363	100

4.2. Confirmatory factor analysis for the scales

Factor analysis is "a multivariate analysis technique used to understand the relationship structure underlying a data matrix" (Hair, Anderson, Tatham, & Black, 1998). If expressed with a similar definition, factor analysis is “a statistical technique that transforms many interrelated variables into meaningful and few independent factors” (Kalaycı, 2014). To verify the developed structure, a measurement model was created and tested with confirmatory factor analysis (CFA). The x^2 / df value must be less than 3 for the model to be valid. In addition, the RMSEA value must be less than 0.08. In addition, GFI and CFI values should be higher than 0.90 and AGFI value should be higher than 0.8. When these values are reached, it can be claimed that sufficient harmony is achieved between the model and the data.

The confirmatory factor analysis results are shown in Table 2. It is observed that there is a sufficient fit between the model and the data. According to the analysis results, it seems that the scales are suitable for analysis.

Table 2: Confirmatory Factor Analysis Results

Parameter Estimates	Standardized (β)	S.E.	Fit Values
Measuring Model			
POP1 <--- POP	0.490*	0.050	
POP2 <--- POP	0.684*	0.028	
POP3 <--- POP	0.717*	0.041	
POP4 <--- POP	0.804*	0.034	X^2 [48.2, N=363] = 16, CMIN/df (3.015)**, CFI (0.980)***, RFI (0.950)***, IFI (0.981)***, TLI (0.966) NFI (0.971)***, RMSA (0.075)****
POP5 <--- POP	0.881*	0.031	
POP6 <--- POP	0.885*	0.030	
POP7 <--- POP	0.713*	0.034	
POP8 <--- POP	0.636	0.042	
JS1 <--- JS	0.929*	0.053	
JS2 <--- JS	0.937*	0.054	X^2 [6.7, N=363] = 3, CMIN/df (2.226)*****, CFI (0.998)***, RFI (0.986)***, IFI (0.998)***, TLI (0.992) NFI (0.996)***, RMSA (0.058)****
JS3 <--- JS	0.768*	0.045	
JS4 <--- JS	0.700*	0.048	
JS5 <--- JS	0.869*	0.046	
NC <--- OC	0.988*	0.045	
CC <--- OC	0.976*	0.039	
AC <--- OC	0.885*	0.039	
NC1 <--- NC	0.670*	0.050	
NC2 <--- NC	0.680*	0.050	
NC3 <--- NC	0.869*	0.054	
NC4 <--- NC	0.878*	0.054	
NC5 <--- NC	0.668*	0.046	
NC6 <--- NC	0.925*	0.047	
AC1 <--- AC	0.845*	0.047	X^2 [368.6, N=363] = 125, CMIN/df (2.949)*****, CFI (0.971)***, RFI (0.957)***, IFI (0.971)***, TLI (0.964) NFI (0.956)***, RMSA (0.073)****
AC2 <--- AC	0.884*	0.045	
AC3 <--- AC	0.887*	0.046	
AC4 <--- AC	0.896*	0.043	
AC5 <--- AC	0.871*	0.045	
AC6 <--- AC	0.856*	0.043	
CC1 <--- CC	0.898*	0.049	
CC2 <--- CC	0.906*	0.049	
CC3 <--- CC	0.915*	0.044	
CC4 <--- CC	0.928*	0.047	
CC5 <--- CC	0.923*	0.045	
CC6 <--- CC	0.919*	0.046	

* p<0.01, ** 3 < CMIN/df < 5 (Acceptable fit), *** CFI, NFI, RFI, IFI, TLI > 0.95 (Good fit), **** 0.05<RMSA< 0.08 (Acceptable fit), *****CMIN/df < 3 (Good fit)
POP (Perceived Organizational Support), JS (Just Satisfaction), OC (Organizational Commitment), AC (Affective Commitment), CC (Continuance Commitment), NC (Normative Commitment)

4.3. Validity and reliability analysis

Validity analysis results of the scales used in the study are given in Table 3. When

we look at the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test result, it is seen that all scales are higher than 0.80. In addition, Bartlett's Test of Sphericity results show that it is lower than p <0.01. These results support that the tension levels of our scales are at an acceptable level.

Table 3: Kaiser Meyer Olkin (KMO) and Bartlett Tests results of the scales

		Perceived Organizational Support	Job Satisfaction	Organizational Commitment
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.959	0.874	0.910
Bartlett's Test of Sphericity	**Approx. Chi-Square**	8302.816	1555.562	1660.759
	df	153	10	28
	Sig.	0.000	0.000	0.000

Reliability analysis test results of the scales are presented in Table 4. When Table 4 is examined, it is seen that the Cronbach α values of all scales are higher than 0.80. For this reason, it is seen that the reliability levels of all scales used in the study are at an acceptable level.

Table 4: Reliability Analysis Results

Scales	Items	Cronbach α
Perceived Organizational Support Scale	8	0.889
Organizational Commitment Scale	18	0.975
Job Satisfaction Scale	5	0.929

4.4. Correlation analysis

Correlation analysis was used to determine the direction and level of the relationship between variables discussed in the study. Correlation relations between variables are shown in Table 5. According to the correlation analysis results, the relationships between variables are as follows. (i) positive direction between perceived organizational support and job satisfaction, significant and moderately strong (r = 0.349, p <0.01), (ii) positive direction, significant and moderately strong (r = 0.261, p <0.01) between organizational commitment and job satisfaction, (iii) positive, significant, and moderately strong (r = 0.704, p <0.01) between organizational commitment and perceived organizational support.

Table 5: Correlation of Variables

Variables	Mean	S.D.	POP	JS	OC
Perceived Organizational Support	4.04	0.53	1		
Job Satisfaction	4.09	0.83	0.349*	1	
Organizational Commitment	4.00	0.75	0.704*	0.261*	1

* $p < 0.01$

4.5. Structural equation modeling path analysis

4.5.1. Path analysis results for the Basic Model

The path analysis model for the basic model is presented in Figure 2. According to the analysis results for the basic model, there is a positive, direct, and significant relationship between perceived organizational support and organizational commitment. (Standardized β=0.26, p<0.01). Table 6 shows the fit index values of the basic model. It is understood that all the fit indexes are above the desired level. According to these results, the *H1 hypothesis was accepted*.

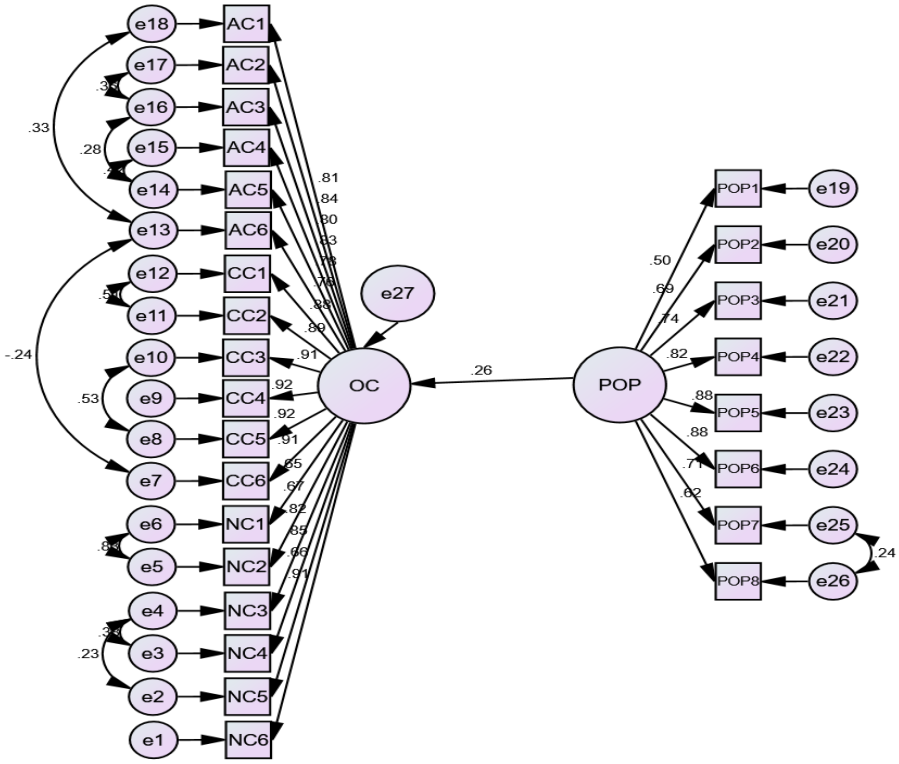

Figure 2: Path analysis model of Perceived Organizational Support (POP) and Organizational Commitment (OC)

Table 6: Results of the path analysis model of perceived Organizational Support (POP) and Organizational Commitment (OC)

Parameter Estimates	Standardized (β)	S.E.
Structural Model		
OC <--- POP	0.26*	0.100
X^2 [954.4, N=363] = 287, CMIN/df (3.325)**, CFI (0.934)***, RFI (0.896)***, IFI (0.934)***, TLI (0.925) *** NFI (0.908)***, RMSA (0.080)****		

* p<0.01, ** 3 < CMIN/df < 5 (Acceptable fit), *** CFI, NFI, RFI, IFI, TLI > 0.90 (Acceptable fit), **** 0.05<RMSA< 0.08 (Acceptable fit)

4.5.2. Path analysis results for the Intermediary Model

Intermediary model results are shown in Figure 3 and Table 7. There is also a positive, direct, and significant relationship between perceived organizational support and job satisfaction (Standardized β=0.36, P <0.01). There is a positive, direct, and significant relationship between job satisfaction and organizational commitment (Standardized β=0.71, P <0.01). According to the results of the intermediary model, the positive relationship between job satisfaction and organizational commitment, which was previously seen in the basic model, disappeared and the meaningful relationship became meaningless. (Standardized β=0.07, p> 0.05). Table 7 shows the fit index values of the intermediary model. It is understood that all of the fit indexes are above the desired level. With this finding, our *H2 hypothesis was accepted*.

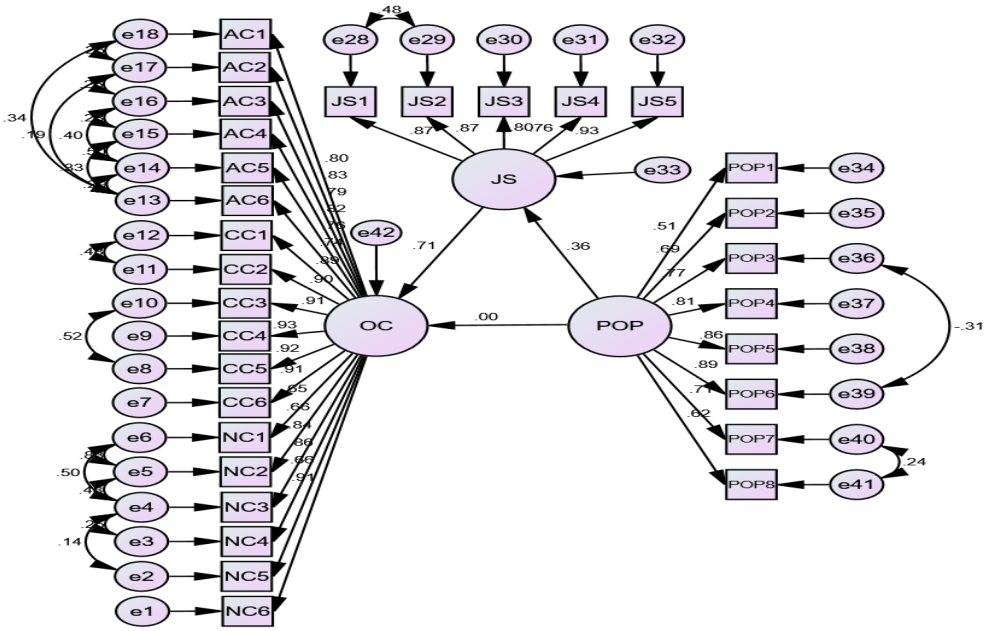

Figure 3: Path analysis model of Organizational Commitment (OC), Job Satisfaction (JS) and Perceived Organizational Support (POP)

Table 7: Results of the path analysis model of Organizational Commitment (OC), Job Satisfaction (JS) and Perceived Organizational Support (POP)

Parameter Estimates	Standardized (β)	S.E.
Structural Model		
JS <--- POP	0.71*	0.115
OC <--- JS	0.36*	0.047
OC <--- POP	-0.00**	0.074
X^2 [997, N=363] = 412, CMIN/df (2.420)***, CFI (0.951)****, RFI (0.910)****, IFI (0.952)****, TLI (0.945) **** NFI (0.920)****, RMSA (0.063)*****		

* p<0.01, **P>0.05, *** CMIN/df < 3 (Good fit), *** CFI, NFI, RFI, IFI, TLI > 0.90 (Acceptable fit), **** 0.05<RMSA< 0.08 (Acceptable fit).

5. CONCLUSION

Two models were tested in this study. In the first model, the effect of perceived organizational support on organizational commitment was examined. According to the results of the analysis, it has been determined that perceived organizational support has a positive and significant effect on organizational commitment. The H1 hypothesis is supported. If employees are supported by their organizations, their loyalty will increase, and they will perform their activities by showing high performance to the organization more efficiently and effectively (Özdecevioğlu, 2003).

In the second model tested, the mediating role of job satisfaction in the effect of perceived organizational support on organizational commitment was examined, and it was determined that job satisfaction had a full mediator role in this relationship. The H2 hypothesis is supported. Organizational support is the value given to the employee. In this regard, if employees feel valuable, this situation increases their organizational commitment. Employees' job satisfaction also increases their organizational commitment. Thus, a strong correlation was found between job satisfaction and perceived organizational support. Organizational support, which enables employees to satisfy their emotional needs, has a positive effect on job satisfaction by increasing the reward-performance effect (George, 1989). If employees feel valued within the organization, their job satisfaction also increases (Hellman et al., 2006). These results are also supported in previous

studies (Allen et al., 2003; Riggle et al., 2009; Aksoy & Sökmen, 2018).

When job satisfaction is included in the model showing the relationship between organizational commitment and perceived organizational support, it is concluded that it has a full mediating effect. This result is consistent with the results of the study conducted by Diken et al. (2019). Perceived organizational support indicates

that the organization values the contribution and efforts of employees (Eisenberger et al., 2016). In this way, the organization strengthens the perception of belonging to the employees and makes them feel that they are a member of the organization (Rhoades and Eisenberger, 2002). Therefore, perceived organizational support is expected to develop positive attitudes and behaviors towards the organization in employees and increase the performance of the employee (Harris & Kacmar, 2018).

The results of the study are especially important for managers who are responsible for the management of human resources, the most valuable resource of organizations. It is seen that managers who do not value employees cannot fully benefit from the capacity and performance of their human resources. These findings are especially important for managing the human resources required for the successful management of logistics companies. If employees have a perception of organizational support, their commitment to their organizations increases. In this way, they will show higher performance for organizational purposes. Our suggestions for the next researchers are to repeat the research in different sectors.

DISCLOSURE OF CONFLICT

The authors declare that they have no conflicts of interest.

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A BOOK REVIEW – IDENTITY: THE DEMAND FOR DIGNITY AND THE POLITICS OF RESENTMENT

Didem Doganyilmaz Duman

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A BOOK REVIEW- IDENTITY: THE DEMAND FOR DIGNITY AND THE POLITICS OF RESENTMENT

Didem Doganyilmaz Duman*

ABSTRACT

With this analysis, a descriptive and a critical review regarding Francis Fukuyama's latest book entitled "Identity: The Demand for Dignity and the Politics of Resentment" is provided.

SUBJECTS: *Dignity, Politics of Resentment, Identity, Review*

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Identity, as in modern understanding, is claimed to be evolved into its secular form and by the early 19th century most of its components have become present. If one takes into consideration its connection with politics, Francis Fukuyama states that desire for public recognition for one's inner worth is the born of identity politics (p.107). With this basis and triggering of 2016 events of Donald J. Trump's election as President of the USA and Brexit referendum, Fukuyama (2018), on his latest book entitled *Identity: The Demand for Dignity and the Politics of Resentment* focuses on identity politics with significant attention to current political leanings including rising populism alongside nationalism and Islamism. By emphasizing three main points (results of identity politics, its being a threat to liberal democracy and necessity of a more inclusive national identity), he provides an interdisciplinary approach originated from a philosophical

background and elaborated his arguments through social psychology within the political framework of liberal democracy.

He provides the distinction between inner and outer selves with the focus of self-esteem. He claims that "the inner-self is the basis of human dignity" (p.10) and this sense requires recognition. This is the origin of his main argument that he built upon the *thymos* as a spirited part. With the Greek origin, Fukuyama refers to *thymos* as the part of the soul that craves recognition of dignity; *isothymia* as the demand to be respected on an equal basis with other people and *megalothymia* as the desire to be recognized as superior (p.xiii). As discussed in further chapters, with democratization of dignity from *megalothymia*, in other words being superior, to *isothymia* as being equal; he highlights *tyhmos* as the seat of today's identity politics (p.18). The necessity of recognition is described within the debates of inner self's acknowledgement by the public and he links the process first with Protestant components then clears a path for its secularization with enlightenment philosophers and relates the construction of modern identity with liberalism in accordance with its social and economic aspects that provide with more choices and opportunities. He elaborates this claim with an example of a man from Saxony who used to live in a village where his life was set in a homogeneous environment and moved to a city to work in a factory in further chapters. With this example referring to *Gemeinschaft* to *Gesellschaft*, he also explains how nationalism and religion-based politics have been awakened recently. He constructs his arguments upon individuals' search for inner self and he argues that individuals within heterogeneous environments tend to bind to social groups and as a psychological fact, nationalism reawakens. This process of how nationalism resurfaces might be seen as a challenge to individualist progress of modern societies; however, Fukuyama emphasizes that those two were bifurcate outcomes of the politics of recognition and dignity dated back to the early 19th century. Regarding religion -most specifically Islam-, he defines the social group with religious bound and states that nationalism and Islamism becomes species of identity politics as in primordialist approach.

There is a very significant reference that he uses by the end of Chapter 4 (p.41) where he claims that people were in demand for recognition of their political personhood during the French Revolution. With this emphasis, he forms the

background of his analysis regarding social movements of the 21st century in which people were seeking recognition and dignity for their identity in the next chapter entitled Revolutions of Dignity. While he connects various democratic movements of the century with recognition of one's dignity, it would not be wrong to claim that it is also a clear reference to not only the new social movement theory in terms of identity basis or as in Fukuyama's words being *primed to think in identity terms* (p.107), but also the shift from class politics to identity politics.

As mentioned earlier, Fukuyama points out U.S. Presidential Elections of 2016 and Brexit Referendum as the core reasons why he focused on the subject. Alongside these two examples, he focuses on populism with the basis of identity and provides a distinctive approach by emphasizing middle/working class people, who claim themselves as left-out and at the core of national identity. By narrowing marginalized groups and with endangering free speech, identity politics became problematic since identity is interpreted in certain specific ways. Eventually, the groups who are different than the majority have gained significant attention due to increased *political correctness* that avoids people to use identity components those encourage the otherness. According to him, this is the reason why identity politics has been shifted from left-wing politics, in which it is tended to legitimize certain identities while *denigrating* others, to right-wing politics, in which middle/working class was claimed to be victimized by the national elites. Fukuyama states that Donald J. Trump has a significant contribution on this shift alongside other populist leaders. The expansive attention paid to other social groups including blacks, gays, immigrants etc., which was highlighted as positive changes for the groups in question, has brought about uneasiness amongst the social group at the core of national identity in different ways, which can be explained in terms of both symbolic and realistic threats. Eventually, the us/other dichotomy possessed and used by the right-wing populist parties and/or leaders has gained its utmost attention as it was perceived as a tool to re-gain the dignity of the masses that has once been harmed by privileges provided to *other* social groups.

Through the end of the book, Fukuyama elaborates certain aspects with the basis of different examples from the USA and Europe. As opposed to the rise of identity politics that undermines the unity of people, he suggests an inclusive national identity built around liberal and democratic values (p.128). He claims

that the traditional understanding of the national identity, which does not origin from any biological component but is socially constructed, cannot fit with different values and cultures of newcomers and is already in hostility with the left politics for being racist and intolerant. With this inclusive national identity, liberal democracies would survive with attachment of citizens to constitutional government and equality. As he discussed in detail in the last chapter entitled "What is to Be Done?", in which he makes policy recommendations, the sense of pride and patriotism would not only create the culture that democracies are in need but also unite the citizens regardless of any differences. By highlighting common language and shared commitment to common principles of government, a creedal national identity is referred to create a mutually bounded relationship so that mutual trust would avoid any kind of violence against any social groups while integrating them into the majority. Accordingly, he suggests a new agenda for Europe in terms of national identity with pan-European characteristics instead of ethno-nationalist ones alongside a shift from *jus sanguinis* to *jus soli*. For the USA, he recommends reemphasizing the very existing creedal national identity from the American Civil War.

Identity has become one of the focus points of political science since the second half of the 20th century and the identity politics is mostly acknowledged as a tool for division and discrimination. However, with this work Fukuyama suggests a unifying role for identity - despite engendered problems as its consequences - through certain policies including *assimilation* of newcomers into an upper identity which consists of creedal characteristics including nationalist, patriotic and state-bounded features such as constitutionalism, rule of law and equality, instead of race, ethnicity and/or religion. He acknowledges that the identity politics would not be ceased and even though he suggests this inclusive identity as a *remedy* for current populist politics that theoretically demonstrates a very solid and clear path to *national cohesion*, it would not be wrong to claim that it will bring about certain critics with the basis of liberal theory of minority rights connoting recognition of differences as part of pluralism and multiculturalism. However, besides the critics, it is a very essential source to read in order to understand the current political environment consists of populist politics articulated with the identity politics, and to take part in further debates regarding both the issue itself and controversies that have been and will be engendered by this very book.

DISCLOSURE OF CONFLICT

The author declares that she has no conflicts of interest.

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