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From the Editorial Committee

We are giving you the next Vol. 26, No. 3(2021) issue of the Quarterly of the Faculty of Management of the Rzeszow University of Technology entitled “Modern Management Review”.

The primary objective of the Quarterly is to promote publishing of the results of scientific research within economic and social issues in economics, law, finance, management, marketing, logistics, as well as politics, corporate history and social sciences.

Our aim is also to raise the merits and the international position of the Quarterly published by our Faculty. That is why we provided foreign Scientific Council, as well as an international team of Reviewers to increase the value of the scientific publications.

The works placed in this issue include many assumptions and decisions, theoretical solutions as well as research results, analyses, comparisons and reflections of the Authors.

We would like to thank all those who contributed to the issue of the Quarterly and we hope that you will enjoy reading this issue.

With compliments
Editorial Committee

MODERN MANAGEMENT REVIEW **2021**
MMR, Vol. 26, No. 3(2021), pp 7-15 **July-September**

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STRATEGIC LEADERSHIP AND PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES: THE ROLE OF STRATEGIC INTERVENTIONS

The study examines how strategic interventions mediate in the relationship between strategic leadership behaviors and firm performance of SMEs in Nigeria. A survey of 834 registered operators of SMEs through structured questionnaire was used and data were analysed using mediation analysis through structural equation modeling. The results showed that strategic leadership influence performance through strategic interventions decomposed into organisational learning and cultural values. It showed that the mediator exerts stronger effect on performance than the independent variable. It revealed further that strategic interventions are significant in its causal effect on performance of SMEs than strategic leadership. The implication is that the operators should not only encourage employee to be optimistic in future accomplishment and stimulate a sense of logic to create the notion of problem solving, but also must inculcate the culture of paying attention to employee talents and needs for performance improvement.

Keywords: strategic interventions, cultural change, strategic leadership, organisational learning, performance.

1. INTRODUCTION

The performance and competitiveness of firms such as small and medium enterprises are critical issues to owners and managers. Studies (Katila & Shane, 2005; Ahuja & Lampert, 2001) have raised questions on differences in performance of firms existing in the same industry with mixed outcomes. According to Arasa and K'Obonyo (2012), competitive advantage that emanates from organisational internal competencies can be safer in creating benefits for firms. Thus, leadership factor as an important aspect of

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organisational internal competitive superiorities, have been identified as the most important individual influences on firm success (Harborne & Johne, 2003; Sethi, 2000). AbduiRazaq (2010) notes that the effective development of good leadership is one of the driving forces for small and medium enterprises success in the future, inadequate leadership and management skills however, are factors leading to their failure (Davies, Hides & Powell, 2002). Further, Waidman, Ramirez, House and Puranam (2001) argue that it is possible for leaders to have substantive influence on the overall performance of the firm they lead, and that specific characteristics of managers at strategic level do indeed make a difference in strategy formulation and overall performance (Strand, 2017; Hambrick, 2007; Hambrick & Mason, 1984). This perspective of leadership is embedded in strategic management and it is called leadership of organisation (Bedeian & Hunt, 2006) and strategic leadership (Cummings & Worley, 2009). It constitutes the small group of people who are top executives that take absolute responsibility for the firm and whose decisions on courses of actions affect organizational outcomes (Papadakis & Bourantas, 1998; Finkelstein & Hambrick, 1996). The upper echelon study of Boal and Hooijberg (2001) form the foundation of strategic leadership which Bass's (1985) framework of transformational and transactional has proved to be useful in the study of people who have the overall responsibility for the organisations.

Strategic leaders are those who will take the initiatives to drive the strategic vision so that firms do not lose focus on their customers. These leaders implement change (Kotter & Heskett, 1985), and cultural change (Dyer, 1985) that will bring a new set of assumptions and belief to the organisation. The leaders learn how to shape a firm's shared values to sustain an effective organisational culture for competitiveness (Slawinski, 2007) as well as have the power to influence the overall firm effectiveness by leveraging the firm's strength to surmount external threats for exploitation of opportunities (Yukl, 2010). Strategic leaders are value-driven, exhibit inspirational and supportive behaviours (Oladele, Akeke, Adebisi & Adeusi, 2013), and have the required cognitive and behavioural complexity necessary to translate their social intelligence into effective business performance in an ever changing organizational landscape. Strategic leadership play a significant role in gaining and maintaining competitiveness and their impact on organisational effectiveness and success is positive and significant (Safarzadeh, Dahghan, Pazireh & Pouraskari, 2015; Yazdani, 2009; Hitt, Keats & Demarie, 1998). Strategic leaders affecting organisational culture may as well have the capacity to affect organisational learning capacity directly (Phipps & Burbach, 2010).

Empirical researches on the connection between strategic leadership and performance have been conflicting. While some studies indicate significant positive relationship (Quigley & Graffin, 2017; Ireland & Hitt, 1999), others show the magnitude of influence over performance is insignificant because their actions are impeded by many constraints (Fitz, 2017; Hareman, 1992). Thus, a lack of clear cut evidence on direct connection between strategic leadership and performance is created (Knies, Jacobsen & Tummers, 2016). The literature has argued that critical organizational variables and internal systems such as strategic interventions in the form of organizational learning and cultural change that might mediate such relationship have received some frivolity. "Strategic interventions involve a deliberate attempt to move organisations toward a more effective state and improve performance" (McLean in Akeke, 2019). It is a long-term effort to bail out organisations because it involves organizational learning and cultural change as two organizational phenomena among organisational systems that help to build organisations

and make them competitive Cummings & Worley, 2009). Organisational culture is a set of values, beliefs, and behaviour patterns that forms the core identity of organisations, and help in shaping the employees' behaviour (Schein, 1992; Kotter & Heskett, 1992). It provides a kind of cognition framework that affects how a firm's context is defined and mechanism for executing events (Jones, 1983).

Organisational culture affects employee and organisational outcomes (Abu-Jarad, Yusof & Nikbin, 2010), employee development, learning and behaviour (Bollinger & Smith, 2001), knowledge management (McDermontt & O'Dell, 2011) and financial performance (Yesil & Kaya, 2013). Rashid, Sambasivan and Johari (2003) argue that the importance of culture to organisation is likened to the personality of an individual therefore; culture is the soul that makes members act as a single entity working in the same direction. By the styles of leaders, an organisation is able to promote and reinforce a work context that facilitates learning through cultural framework (Joseph & Dai, 2009). Therefore, as culture helps to influence how the firms conduct their businesses as well as the methods used to regulating and controlling the behaviour of organizational members, it can form a platform for learning to take place and achieve sustained performance (Akeke, 2019).

Organisational learning importance indicates that it is a need rather than a choice (Garcia-Morales, Jimenez-Barrinonuevo & Gutierrez-Guttierez, 2011), as such, (Senge, 1990) argues that many organisations die before their forties in existence due to their inability to learn. Organisational learning is an activity which includes the creation of specific skills, dissemination of acquired skills, integrating the knowledge into the systems to become capability for improved performance (Zollo & Winter, 2002; Dibella, Nevis & Gould, 1996). Senge (1990), Fiol and Lyles (1985) and Namada (2017) maintain that organisational learning is a process through which individuals in organisation develop new insights that have potential for improved organisational performance. Firm performance has not only been associated with owner satisfaction and growth in terms of sales, market, profit and employment growth, but has been argued as critical elements in achieving sustained competitive advantage and profitability (Ahmad, 2014; Fitzsimmons et al., 2005; Markman & Gartner, 2002).

Therefore, this study proposes an investigation of the influence of strategic leadership on firm performance through the mediating role of strategic interventions. Specifically, it seeks to examine how organisational learning and cultural change mediate between strategic leadership behaviors and firm performance.

2. MATERIALS AND METHODS

The study was carried out in the Southwest states of Nigeria. The study comprises all operators/owner-managers/CEOs of all 8,338 registered SMEs under the aegis of Ministry of Commerce and Industry in southwest, Nigeria. To ensure representativity of the sample, a multistage sampling method was used. In the first stage, only SMEs that were duly registered with the regulatory authority and in active business activities were purposively selected. The second stage involves stratification of the enterprises into small and medium enterprise. At this stage equal proportion of the enterprise group were selected. The third and the large stage involves random selection of eight hundred and thirty-four (834) SMEs. Overall, the randomly selected sample represents a sample fraction of 10%. Data were collected through a survey research design using a structured 5-point Likert scale with the exception of performance measures which include nominal scale. The questionnaire was

structured according to the major variables of strategic leadership, strategic interventions, and performance measures. The questionnaire was self-administered with the assistance of well-trained enumerators due to the volume and large areas that were covered for the study. The data collected were analysed using descriptive statistics and mediation analysis. Mediation analysis was carried out to determine the mediating role of change interventions in the relationship between strategic leadership and performance of the sample firms. The mediation analytical method was chosen because of existence of causal process between strategic leadership, interventions and performance. This selection of this method follows similar studies including Kamariah, Rahman and Kadir (2018). The mediation analysis was carried out through structural equation modeling process. The mediation analysis seeks to measure causal effect between an independent variable and a dependent variable. There are also indirect effect between independent variable and a mediator variable, and between a mediator variable and a dependent variable. The mediation analysis requires there is a significant relationship between the mediator and the independent variables.

3. RESULTS AND DISCUSSION

3.1. Descriptive Statistics of the Study Variables

The descriptive statistics of the study variables are presented in Table 1. The variables of strategic leadership and strategic interventions and performance outcomes are presented in Table 1. The average value of strategic leadership measures is 3.57 while that of strategic interventions is 3.89. Most of the individual values of strategic interventions in SMEs are above average measure suggesting higher perception of respondents for the possible mediating contribution of change interventions on performance of small and medium businesses. Continuous learning (3.57), inquiry and dialogue (4.00), team learning (3.86), empowerment (4.30), embedded system (3.85) and system connection (3.78) are rated high by respondents as relevant strategic interventions factors in the SMEs.

Table 1. Descriptive statistics of the study variable

	Mean	**Std. Dev.**
Charismatic	3.74	0.98
Inspirational	2.99	0.99
Intellectual	3.09	1.03
Individual	3.99	0.81
Contingent	4.02	0.81
Total average	**3.57**	**0.92**
Continuous Learning	3.57	0.59
Inquiry & dialogue	4.00	0.84
Team Learning	3.86	0.91
Empowerment	4.30	0.71
Embedded system	3.85	0.99
System connection	3.78	1.01
Total	**3.89**	**0.84**

Source: own study.

3.2. Mediation Analysis of Strategic Interventions in the Relationship between Strategic Leadership and SMEs Performance

The results of mediation analysis are illustrated in figure 1. The estimated regression effect of the mediation analysis is presented in Table 2. The results (Table 2) show a positive and significant effect of the variables on performance. The result shows that strategic leadership influence performance of SMEs through strategic interventions by 0.471. This represents the value of effect independent variable and mediator on performance of the firms. In the absence of the mediator (strategic interventions), the isolated effect of strategic leadership on performance is approximately 0.35. In the absence of strategic interventions, the isolated effect of strategic interventions is 0.11. The results bring a lot of implications. First, the mediator (strategic interventions) exerts stronger effect on performance of the SMES than the independent variable. Clearly, strategic interventions are significant (5%) in its causal effect on performance than strategic leadership. This corroborates Slater and Narver (1995) and Glynn (1996) that learning can assist firm to create the future because it involves the use of knowledge to facilitate performance enhancing organizational change. Second, strategic leadership also exerts significant effect on performance without the mediator-strategic interventions. Third, the combination of strategic interventions with strategic leadership brings about higher effect on the performance of the SMEs and strategic interventions clearly mediate strategic leadership and performance of SMEs. This supports Garcia-Morales et al. (2012) that strategic leaders use their behaviours to support exploratory innovation through feed-forward flows of learning by motivating organizational members to share knowledge. Therefore, firms that show a greater breadth, depth and speed of organizational learning have higher levels of performance (Hurley

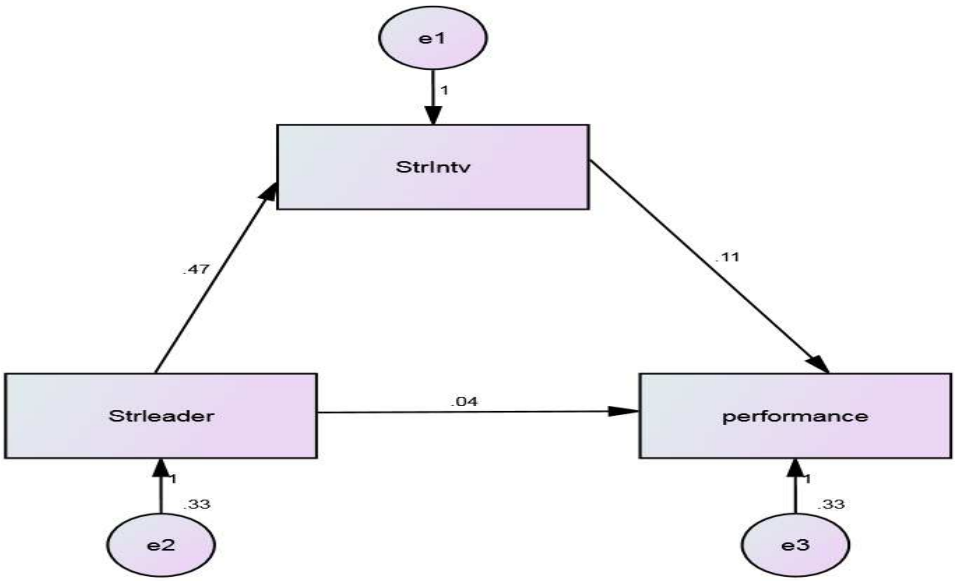

Figure 1. A diagram of mediation model Strinv= strategic interventions (strategic interventions), strleader = (strategic leadership)

Source: own study.

Table 2. Regression estimates (Total effects) of mediation analysis

			Estimate	S.E.	C.R.	P	Label
StrIntv	<---	Strleader	.471	.038	12.353	***	par_2
performance	<---	Strleader	.035	.012	2.917	***	par_1
performance	<---	StrIntv	.106	.045	2.325	.020	par_3

Source: own study.

& Hult, 1998). Additionally, organizational culture will affect organizational outcomes, learning and behavior which also provide adequate way to change (Janicijevic, 2012; Abu-Jarad *et al*., 2010; Bollinger & Smith, 2001) for superior performance.

4. CONCLUSION AND RECOMMENDATIONS

Strategic interventions are needed by organisations for improving their performance. The study contributes to such performance improvement by showing the increasing importance of components of strategic interventions as mechanism through which strategic leadership impact SMEs performance. Past studies have maintained a direct link between strategic leadership and firm performance. The study has showed an indirect relationship between strategic leadership and performance through strategic interventions as mediating variable. The findings of the study lead to the conclusion that inspirational leadership, intellectual leadership and individual leadership mediated by continuous learning, team learning and well embedded strategic system are the important pathways to good performance in SMEs sectors. The impact of organizational learning and cultural values in organizations can be felt through the role played by strategic leadership. Culture provides a platform by which learning takes place. In addition, organizational learning and organization culture have significance on firm performance. The study recommends the need to position the future entrepreneur for strategic leadership quality through learning in order to raise the economic standard of the country via SMEs performance. The finding of the study proved that leadership structure in SMEs has been oriented towards to achieve the vision and the specific goals of the business organizations though strategic interventions. This positive and significant relationships agree with earlier studies including Safarzadeh, et al., (2015), and Yazdani, (2009). However, for large business organization, this finding is at odds as empirically proved by Kamariah, et al. (2018) in their focus on complex business structure. Overall, the study proves that leadership styles are customizable across sectors. Leadership structure is important for the overall success of small business

The study used respondents from one of the six geopolitical zones in Nigeria with similar cultural traits. This may limit its generalisation. Further research can extend to more than one zone to allow for results generalisation. Besides, time dimension is a limitation to the study because performance measures were collected on one point in time. Perhaps, further studies could do a longitudinal survey.

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ONLINE SHOPPING BEHAVIOR IN THE PERSPECTIVE OF MARTIN HEIDEGGER'S TECHNOLOGICAL PHILOSOPHY

The purpose of this study examined online shopping behavior in Surabaya by using a technological philosophical point of view. The research contributes on critical thinking about human life in the era of technology, especially in online shopping. Methodology: This research approach was qualitative, with the phenomenological method from Martin Heidegger. Research informants were obtained using a key person who already knew the living conditions around the analyzed location. The data collection method used systematic interviews. Findings: The results show that the nature of online shopping behavior is a form of framing shopping as it is. Moreover, the result of this study are expected to contribute critical thinking related to human life in the world of technology.

Keywords: Martin Heidegger, Philosophy of Technology, Online Shopping Behavior.

1. INTRODUCTION

Futurologist Alvin Tofler sees that there are lifestyle companies that shape people's lifestyles, this is shown by the symbols appearing in the mass media such as lifestyle television shows. Anyone who fails to maintain a modern lifestyle in a group will feel alone (loneliness) and alienation (Toffler, 1971). Online shopping is a modern lifestyle because it is an event that arises after the existence of information technology such as the internet. Online shopping is a different shopping activity compared to traditional shopping.

Shopping, according to Engel, is started from fulfillment specific needs. The activity of “shopping” refers to someone's natural action to get goods that are needed by exchanging an amount of money in exchange for these goods (Engel, 1994). Meanwhile, online shopping means a manifestation of technology in electronic marketing of goods (e-commerce), for example, internet malls, namely mall businesses on the internet. Ritzer states that in general online shopping can be seen no longer as shopping as a fulfillment

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of needs but shopping as a broad field in which forms of necessity are centrally arranged and controlled (Ritzer, 2006).

One of the problems that arises is excessive shopping behavior (compulsive buying). The reason for compulsive buying behavior is the change in the rapid flow of trends in online shopping activities, for example the headlines in online stores always change from time to time (Sang Hee, Yun Jung, 2014). Compulsive buying behavior is self-destructive shopping behavior, a shopping behavior based on the need to get out of feelings of anxiety and discomfort, so that they find comfort through shopping even though they create financial problems in a person (Sang Hee, Yun Jung, 2014).

Based on the paragraph above, the main problem of this research is the sociological argument that the internet in general and internet pages on the internet in particular produce inanition (Ritzer, 2006). The word “empty” (nihil) means meaningless, because the entire meaning space has been framed. For example in the phenomenon of online shopping, the meaning of shopping as a fulfillment of needs becomes a phenomenon of uncontrolled buying or compulsive buying because people forget the meaning of shopping and seek pleasure in shopping (Sang Hee, Yun Jung, 2014).

The point of view of this research is the philosophy of technology. According to Borgman (Borgman, 2005), Martin Heidegger's technological philosophy discusses the human condition in the technological era. The core of the technology philosophy is that modern technology is a tool to reveal nature and humans as resources used in the production process. The purpose of this study is to find out the nature of online shopping behavior through the perspective of Martin Heidegger's technology philosophy and to offer solutions to see technology in online shopping at the same time. The benefit of this research in general is that it contributes critical thinking about human life in the era of technology, especially in online shopping.

2. METHODOLOGY

This study used a qualitative research paradigm; it means that the concepts adopted refer to the qualities of research object such as values, meanings, and events with a qualitative approach (Kaelan, 2005). This study used a phenomenological method, which is a study of what is phenomenal in everyday life, namely: online shopping. Heidegger saw phenomenology working in everyday life to see meaning, based on the vision of phenomenology to read human's natural attitude in relation to the world around it (Heidegger, 1975). Heidegger's phenomenological method used the principle of ontological difference (ontological difference), which means that the difference between the existence of something (Being) and the entity itself (beings). Philosophical research is research to find the meaning of something and bring the meaning that is present to us as a whole possibility (Heidegger, 1975).

2.1. Data Collection

The primary sources of this research data are data from interviews with informants and Martin Heidegger's philosophical thinking literature. A research informant is someone who understands the information on the object of research as an actor and appoints other people who know the object of research (Bungin, 2008). Research informants in the study were determined by purposive sampling, namely data collection techniques that are tailored to

the objectives of the study (Sugiyono, 2016). The informants in this study were 18 people who were residents of Surabaya city who were regular customers of online shops Surabaya.

The researcher obtained informants by using the key person method, namely people who know information about the object of research. Key person also provides clues about who can be interviewed in order to obtain information about the object of research (Bungin, 2008), key person is required to help the researcher find informants who are appropriate and help initiate interviews with informants. The seller (reseller) of goods through an online shop called Onlishop with the owner named Riandini Aprilia Utomo was the key person of this research.

2.2. Data Collection Technique

The data collection technique used in this study was interview, which used systematic interview. A systematic interview is an interview conducted in which the interviewer prepares a written guide on what to ask the informant. The meaning of the evidence from the interview results only shows the presence of what is at issue but not evidence that the essence of online shopping has been objectively grasped. “Evidence” is phenomenological is filling the identification of the purpose of a particular action (Heidegger, 1985).

2.3. Data Analysis

Data analysis in this research was conducted by using methodology elements as follows:

1. Understanding

Understanding is a way discovering something concerned. Understanding is a description (outline) of something familiar regarding a situation context. Understanding in the first place is not a way of knowing (mode of knowing) but rather already knowing in advance where a person says “I can” interpreting items as something. Interpretation is a form of disclosure (explication) of understanding, something that is already known in understanding and can be interpreted by someone called meaning (Heidegger, 1985).

2. Interpretation

Interpretation is an explication from understanding to see something as something. Understanding allows an interpretation that shows a relationship between the phenomenon and the meaning of the phenomenon. Interpretation gives meaning to something; it means that interpreting is looking for words from what a researcher thinks, so that the meaning can be understood by others (Heidegger, 1985).

3. Formal Indication (*Formale Anzeigen*)

The character of the concept in Martin Heidegger's method of phenomenology in particular is a formal indication. Heidegger says that if philosophy seeks a principle from something that is concrete, then giving definition at the principle level still bears reference to something concrete there. Thus, the concept of philosophy regarding phenomena is to determine (formal) but at the same time indicate when a certain phenomenon is used as a reference to say Yes, without claiming to be exactly representative for the whole situation (Heidegger, 2001).

3. RESULT AND DISCUSSION

Online Shopping as a Shopping Framing

The essence of modern technology is a way of revealing, but the way of disclosure of modern technology is setting-upon to reveal (Heidegger, 1977). Online shopping is

a technology manifestation in shopping; it can be said as a possibility that online shopping is no longer in the context of shopping as meeting certain and urgent needs, being transformed into a shopping framing. The word “framing” in the context of online shopping is shopping for items that are originally a fulfillment of a need turned into items that are bought as necessities.

There are two compelling arguments that online shopping is a form of technological framing of shopping:

1. Ritzer says “non-objects” are being sold on internet sites. “Non-object” refers to the simplicity of an object that buyers can find quickly and easily. This makes it easier but at the same time frames humans in consumption. The internet is a place of consumption because of the ease of getting the desired item. The meaning of an object becomes disappeared because the object is purchased not as the owner needs but as part of series of advertisements offered by consumption sites (Ritzer, 2006).

This is in accordance with the wrong statement from one of the informants, Mrs. Mufadillah, who said that online shopping is more efficient but also makes buying unnecessary items, as she said as follows:

“I prefer online shopping because it is efficient and doesn't have to waste time on travel and money. It's different from offline shopping in stores and at malls. There must be free time first to select items.

“Do you really need the items you buy from online shopping? No, I buy it because I want it not a need, so there are many items that I don't really need are bought”.

2. Baudrillard’s argument regarding the counterfeit uses of an item. Baudrillard summarizes the counterfeit uses of an item with the word “gizmo”. The word “gizmo” refers to an object losing its practical aspect which is transferred to a mental image; “mental image” refers to a dream object behind a real object. For example, modern tools such as communication tools become symbols to show their owner's prestige (Baudrillard, 2002).

The purpose of purchasing items on online shopping shows whether the item is purchased is a purchase of a gizmo item in online shopping behavior. Based on an interview with Ms. Ninik, it indicates that items purchased on online shopping sites have gizmo properties in them, as Ms. Ninik said below:

> Do you often follow up-to-date fashion and trends, if a new item comes out, will you buy it, even though the old stuff is still worth wearing? Yes, because most of the items sold are updated and up-to-date, so there is a sense of pride and no shame; Do you have a consumptive style, meaning you buy goods in excess, and in a planned manner. For example, you always want to look up to date? Yes, including consumptive, because I like bag collections and mutually change bags. I am affected by a fashionable environment.

The researcher interpreted that according to Ms. Ninik's testimony, her daily life environment closes to fashionable people which influenced her to this lifestyle. Associated with items that are consumed as gizmo is a lifestyle that prioritizes the style of dress, will buy items with gizmo properties, the reason is that what is important for someone who buys goods is not for the purpose of practical use. For example, materials that are comfortable to wear and durable, but rather with the purpose of collecting clothes to make it look always up to date or following the development of a dress style, is actually what is purchased is not

the practical use of the clothes but a mental image of the gizmo item, which is pride to always follow the development of the style of dress.

The Dangers behind Technology in the Context of Online Shopping Behavior

Based on the Martin Heidegger's thought, the researcher interpreted three dangers of forgetting to exist through framing technology in the context of online shopping.

1. Machination and Life Experience (Lived Experience).

Framing gives direction to the dominance of making and what Heidegger calls machination. The word "machination" means a complex and hidden plan to gain power or control (Heidegger, 1999). The dominance of Machination presses humans to have live experience so that they become spectators of what has just been produced and they are forced to feel uncivilized if they have not tried the new life experiences offered by machination (Heidegger, 1994). Evidence from online shopping behavior is a form of shopping machination which is shopping behavior in online shopping that is conducted by Mrs. Wempy Widya Tristiyanti said:

> For me, shopping online is shopping that is very easy and fun and more practical in this modern era, especially for me who is an office worker. But there is also a downside, if there is an error in shopping.

Researcher interpreted it as living in an office environment that does not have much time to shop, so she makes online shopping as life experience that cannot be missed. This shows that online shopping brings shopping practicality amid the lack of time to shop and online shopping must be experienced to be able to practically shop online.

Total Mobilization

World "total mobilization" is used for the first time by Erns Junger to describe that in 1933, whole workers participated in one purpose, which is the workers' spirit (gestalt) to achieve German reformation. The workers and soldiers are expected to participate in the technological order to rule the world. In particular, "moving the whole" refers to the process of moving the whole resource through modern technology to produce war materials in order to win World War I (Zimmerman, 1990).

Kadokawa Haruki says total mobilization is no longer moving in the military area as it was when Nazi Hitler was in power, but the principle of "moving the whole" is currently in the media industry to direct the masses to use uniformity to move towards consumption. The media move the whole through words, sounds, and images so that the masses come to one unit, namely the unity of standing-serving consumption itself (Steinberg, 2017).

Based on the meaning of "moving the whole" above, online shopping makes the body and motivation move to actively consume. This is in accordance with the testimony of the key informant, Ms. Riandiny, as follows:

We need time to go department store. Meanwhile, online shopping is more practical and spends more money at an ATM. Because online shopping is very easy, practical and sometimes there are lots of promos and discounts for each buyer ... we are affected by the discounts given by the online shop so we want to shop continuously, because the goods are good and facetious.

Based on the testimony above, the researcher interpreted the direction of total movement in the case of online shopping as an impulse to consume offered by online shopping. The impetus that drives someone to actively shop is advertising, practically advertising in online

shopping in the form of promos and discounts has the effect of moving someone's desire to actively consume even though they are not being aware of it.

Standing Serving

Standing reserve is the name for anything that is regulated through framing. Human frames anything real to stand to serve humans, but actually human does not master the framing, human instead stands to serve the framing itself (Heidegger, 1977). Compulsive shopping behavior is a form of embodiment of stand-serve technology in the case of online shopping behavior.

Compulsive shopping behavior is defined as a chronic condition, in which a person engages in repeated buying activities. A person who is compulsive shopping does not see what he will do with his groceries but the consuming activity itself. Shopping has turned into a necessity itself (Soedjatmiko, 2008). Compulsive shopping behavior is an embodiment of standing to serve, the reason is that through an online shopping frame that makes shopping easy, people forget the meaning of shopping as a fulfillment of needs and go deeper into the pleasure of shopping itself, the character of this behavior is to make purchases of goods repeatedly without thinking due to the purchase (Edward, 1993).

Compulsive shopping behavior caused by framing in online shopping can be seen from the interview with Mrs. Ika Lestari as follows:

> Are you able to control your expenses in shopping online? If not, what are you doing to cover the spending deficit? I can't control it because I like shopping and I can't forbear when I see cheap price of clothes and lots of discounts. Sometimes I go into debt to cover this month's shortfall, because last month my spending was too costly.

Philosophical Reflection

Science and Technology Form a Gigantic Framing

One of the main arguments for philosophical reflection is that modern science and technology form gigantic framing. Science enables human as subjects and items (such as nature and life) is objectified to be calculated and planned through science, while to reveal something practically uses technology (Heidegger, 1999). Science and technology form relationships in terms of framing, so that everything is counted to be equal. (Heidegger, 1977).

What determines the nature of science in terms of technology is the methodology and procedures. The methodology is the principles of the way of research relating to individual item space (individual item-sphere). The scientific system lies in the solidarity of methodologies and procedures which are the way to behave (attitude) to get any objectivity at any time. What is remarkable about the scientific system is not the tightness with regard to the item space and its contents, but rather the mastery of research techniques that are in accordance with the methodology (Heidegger, 1977)

At this point, the tools of modern technology as framing meet science as a technical capacity (*technicity*). Modern science is preparing the way for framing. Modern science contains the seed of framing, that is, when science becomes research by planning and securing research results with rigorous procedures. Research then challenges forward to regulating nature, seeing nature as something that must be organized to stand-serve as an information system (Heidegger, 1977). Ultimately, the pervasive power of modern

technology and science in the rules of framing forms the "giant" ("the gigantic") corresponding to industrial society to become dominant (Heidegger, 2005).

Science and technology form a "giant" ("the gigantic"). This meaning of "giant" refers to the dominance of quantity as quality. The phrase "quantity as quality" means, what in the most present meaning before someone is ignored and replaced, counted primarily as what is most commonly represented. (Heidegger, 1999). Currently, "giant" is no longer just a quantity based on calculations and understands the subject that represents the whole entity. The gigantic form of science and technology today lies in the gigantism of the *publictness* (Heidegger, 1999).

In the giants of science and technology, where everything is framed to say one item is the same. There is abandonment of Being, the word "abandonment of being" means what is present in front of someone is ignored, what deserves to be asked (question-worthiness) about the entity disappears (Heidegger, 1999), what can be made (make-ability) through machination (Heidegger, 1999). The result of the domination of machination in many areas of life is the epoch of total lack of questioning. The result is that every attempt to ask and say something that disturbs someone's heart becomes marginalized, replaced by what is safe in the view that has been generally accepted (public), this is abandonment of Being (Heidegger, 1999).

Abandonment of Being

The main argument of this section is the Abandonment of Being by science and technology. The abandonment of Being is the basis on which Nietzsche first recognized nihilism (Heidegger, 1999). The abandonment of Being by technology has correlation with the nature of technology. Technology is a way of disclosure, however, the way of expressing technology is not revealing as it is, but challenging to reveal and organize (set upon). For example, air as nitrogen mine, the earth as a coal mine (Heidegger, 1977).

On the other hand, modern science ignores Being through the desire to build theory due to the machination character in science. Those who are present before humans are challenged to be framed in a theory. Theory deals with presenting what is present to humans, with the character of the power to show (Heidegger, 1977). Modern science makes objectivity in accordance with the character of what is real, but what is real is presented according to a generally accepted theoretical frame, so that anyone who is present before a researcher must be ignored, to be in accordance with the theory. The theory secures the objectivity of research at all times; the space-time difference is ignored to satisfy the validity of the theory. Every new phenomenon that arises in the area of science is manipulated to fit into the theoretical wreck. In other words, science regulates what is real to achieve objectivity (Heidegger, 1977).

The abandonment of Being causes a person to lose the root (autochthony) in which he was formed. A person losing roots means they lose what is closest to him in his homeland. They are "homeless" because every hour of the day is bound by radio and television to feel uncommon, but in fact it is a realm of the imagination that offers a world without a world. This means that all forms of advertisements that are present on television, radio, and pictorial magazines are mastery of communication techniques to bring someone to forget the questions that are present (Heidegger, 1966).

The End of Philosophy

Heidegger saw philosophy as having an end in the current century (present age). Philosophy ends means: philosophy as metaphysics has reached the highest end (consummation). Metaphysics is the thought of Being as a whole in one model. Metaphysics is representational thinking, Being as a whole is held in one principle (*arche*) in the word "is" ("is") (Heidegger, 1972).

Philosophy as metaphysics has reached its highest end (consummation). The highest end means the inevitable development of the fundamental power of metaphysics, the disguised power of "asking" to surface. The highest end of metaphysics means that the essence of metaphysics as valuative thinking has been present in the highest configuration through the metaphysics of will power (Heidegger & Krell, 1987). The final configuration of metaphysics opens up the most extreme possibility to create, through the many ways of making and shaping Being in a variety of worldviews (Weltanschauungen). The development of science in the field of philosophical life increases the role of logic and semantics, philosophy turns into an empirical science about humans and "technology" makes humans to free their values so that humans and technology can establish a world based on fashion of making and shaping. Heidegger saw philosophy as being on the path of science, philosophy based on science based on scientific knowledge and scientific discoveries, philosophy is currently guided scientifically through what is called "cybernetics" (Heidegger, 1972).

The philosophy in cybernetics is in accordance with the human character as a social being. Cybernetics turned language into news exchange, and philosophy was transformed into a separate science that communicated among them. Philosophy then finds its place in the scientific attitude of socially active humans to regulate the totality of entities and position human positions. Socially active human character directs philosophy towards theory; "Theory" ("theory") here means: the arrangement of categories to describe the area of investigation, which will later be used as a working hypothesis of scientists. A cybernetics-based philosophy will interpret everything at a structural level in accordance with the rules of science. The end of philosophy is the triumph of the manipulation of the scientific-technological and social order arrangements of the modern world (Heidegger, 1972).

Philosophy ends in the current century, is in the scientific attitude, this is cybernetic. Philosophy with the character of science tries to interpret anything at the level of structure based on the rules of science; the rules of science based on the truth of what can be measured by the consequences of its application and brings the development of research. Scientific truth is equivalent to freeing the existence of a researcher; the interest of science is directed to the cybernetic function, namely the model and operation of calculative thinking but denying the meaning and where the meaning of something comes from something is. This is the character of technology in science (Heidegger, 1972).

Back to the beginning

Researchers interpret the essence of Heidegger's thought is to restore the relationship between philosophy and everyday life that was cut off since Plato divided the two worlds, namely the transcendental world and the apparent world, this was revealed in the 1919 war emergency semester lecture, namely: The Idea of Philosophy and the Problem of Worldview. Heidegger (Heidegger, 2008) states that the idea of philosophy as primordial science echoes the presence of questions about everyday life. Philosophy as a preliminary

science brings natural life to the root level. A researcher has always been in a specific scientific problem context for him, it is something that is purely a motivational context in researching. Heidegger (2008) sees that at this point philosophy and science are intertwined as habits that indicate the existence of researchers. Every individual life of a researcher is the root of the world of life, which gives motivational value to how the researcher researches in his world environment.

Everyone, including researchers, artists, religious leaders, politicians has a different horizon of life. A researcher does not live in isolation, there is already an environmental world that underlies it and provides a research context for him, and he is not value free from it. The context of life is the original root of the spirit of research. The spirit of research can be found anywhere, including in special sciences (from biology to sociology), the original research spirit develops the life of the researcher to the deepest level and he lives in his work, this means a researcher (scientific man) who will actually develop and elevate the context. The life he experiences is not as a representative form of theory, but as a personally motivated contemplation of life. Only through this path, Being is present at the highest authenticity, as a way of existence for each researcher who maintains what is original his own (Heidegger, 2008).

According to Prometheus, philosophy seeks knowledge, but philosophical knowledge is contemplative knowledge. For the Greeks, this knowledge was not a kind of practical adaptation to theory nor was it a cultural item. Philosophy is the most original realization of a human's daily practice; philosophy is the most decisive center that binds a person to the people around him and the country (Heidegger, 2003).

Philosophy is inseparable from daily life; it is the beginning of philosophy. Early philosophy in the Greeks maintained a relationship with what is present in front of a person, the consequence is that the definition of truth as the accuracy of representing the unknown, truth is a disclosure (*a-letheia*), it keeps their minds from being uncertain, that is, it can be questioned. Questions are not a step to seek answers and gain knowledge, but questions are the highest form of knowing. Questions open up the ultimate power to reveal all essential items. However, after two and a half millennia, human beings change towards development, through Christian theology to the mathematical-technological way of thinking in the modern age, making what philosophy and science collide with each other for certainty, and getting away from essential questions in each of their scientific fields, replaced by a model that has been tested based on the power of formation by historical humans, or simply a model that has been recognized by many people (Heidegger, 2003).

Heidegger (2003) says that if the essence of philosophy lies in questioning, then a person must be ready to survive without guards in the midst of the uncertainty of the whole destiny, here the spirit of research resides, the word “spirit” is not empty intelligence, nor is the game of chaos in the rational mind, and more specifically the spirit is not the world of reason; the spirit is the beginning of harmony, knowing the firmness towards Being itself. The spirit is not shaped by culture, nor is it useful facts and values; the formation of the spirit is the most profound force retained in a person's heart so as to vibrate.

4. CONCLUSIONS AND SUGGESTIONS

There are two conclusions that can be drawn based on the problems raised related to the subject matter that has been carried out are as follows: First, considering Heidegger's thoughts regarding technology, researchers see online shopping as framing (*enframing*)

shopping, meaning: online shopping is wrong one embodiment of technology in electronic marketing of goods (e-commerce). Second, based on Martin Heidegger's technological philosophy, researchers interpret three dangers of online shopping as the embodiment of technology in shopping, namely: first, the dominance of what can be made (machination) and the experience of living to always experience something new. Second, online shopping moves all people to actively consume advertisements. Third, humans stand to serve technology itself. In the context of online shopping behavior, compulsive shopping behavior is the manifestation of standing to serve which is caused by the framing of technology in shopping.

There are three philosophical suggestions from this research, namely: First, Heidegger specifically offers a review of the relationship with technological tools, one can still use technological tools in everyday life as usual. However, one needs to also free oneself the technological tools of being unaffected by one's core roots. One also needs to always be open to what is hidden in the technological tools. Both provide the possibility for a person to be able to survive in a different world as a whole, namely the world of technology.

Second, changing the way of thinking to take into account (calculative thinking) which, taking philosophy further away from disclosing the atmosphere of daily everyday life is replaced by meditative thinking (meditative thinking). To think deeply is to contemplate the meaning of something that is present in front of him and feel the meaning of that something as a whole.

Third, one needs to awaken a fundamental nature for philosophy. His nature to do philosophy means to actively ask what is the meaning of something that is present in front of him, this is related to the need for philosophy to start from the problems of everyday life that seem trivial.

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ISLAMIC ETHICS, ISLAMIC LAW, AND THE PROPER MANAGERIAL BEHAVIOR

The paper is dedicated to two main issues, namely (1) the representation of general Islamic ethics, the analysis of its specific methodology of moral validation by referring to the Qur'an and Sunna, and its interconnectivity with the Islamic law – Shari'a, as well as to (2) presenting Islamic managerial ethics as a derivative from the general Islamic ethics when it comes to both building moral arguments and propagating the proper moral behavior by promoting moral virtues and normatively analyzing what is right and wrong in the particular business situation.

Among the used methods, there was content analysis, comparable analysis, inference, and the evolution of the normative theories. Then, the very Islam-specific confluence of ethics and law is discussed. These data are presented and analyzed as a required context for proper understanding of applied ethics in Islam, and in the case of this paper – Islamic managerial ethics.

Keywords: business ethics, Islam, Islamic ethics, management ethics, Shari'a law.

1. INTRODUCTION

It is a commonly acknowledged fact that cultural differences must be considered when doing business on the international level. Many stories are showing how a lack of awareness of those impedes or even precludes deals from happening. However, those differences may go much deeper than customs or habits and reach the very core of the peoples, i.e., their normative constitution. It is the case of Muslims and how their faith manifests in the rules and principles of their moral conduct as defined by Islam.

This paper has two primary goals. The first one is to show that Islamic ethics in general, and Islamic business and managerial ethics, in particular, are structurally different from the large majority of their western counterparts due to their specific validation method, i.e., constantly referring to the ultimate source of morals, the Holy Book of Islam – the Qur'an. The second – to concisely depict the essence of morally proper managerial behavior according to Islam.

The methods used to realize the first goal were the analytical representation of the fundamental sources of Islamic ethics, its interconnectivity with the Islamic law – Shari'a, and the specific moral validation methodology. Islamic managerial ethics served as an example demonstrating how the validation process functions. At the same time, this brief

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meta and subject-matter analysis of this ethics was provided to present and discuss Islamic beliefs regarding proper managerial behavior.

The paper is divided into four subject-matter sections. The first one is dedicated to the discussion of the sources of Islamic ethics, i.e., the Qur'an, the Sunnah, and the role of reason in moral inference. The subject of the second one is the historical development of ethical theories in Islam. Section three examines the interconnectivity of Islamic ethics and Islamic law, as well as the reasons for it. In the last part, Islamic managerial ethics is presented and discussed in the context of what it consists of and how it is methodologically different from other frameworks.

2. THE SOURCES OF ISLAMIC ETHICS

There is a long-lasting consensus among the scholars researching Islamic ethics and law that there are three fundamental sources of ethical and hence lawful conduct in Islam, namely, the Holy Book – the Qur'an, Sunnah, i.e., the model behavior of the Prophet Muhamad, and the reason, which task is to infer from the above two answers to questions that were not addressed during the lifetime of the Prophet.

The word "qur'an" is a verbal noun which etymological root is the Arabic verb *qara'a* stands for "to read." "Qur'an" then literally means "reading" or "recitation." Mohammad Kamali defines it as "the book containing the speech of God revealed to the Prophet Muhammad in Arabic and transmitted to us by conscious testimony" (Kamali, 2003).

Muslims believe that the Holy Book is a direct word of God inscribed in heaven and revealed piecemeal by Angel Gabriel over the period of over twenty years as a message for all humanity. It supersedes earlier Jewish and Christian scriptures, which in the eyes of Muslims, had become imperfect. The first revelation began in 610 CE when the Prophet Muhammad was meditating in the cave of Hira outside Makkah and ended with the death of the Prophet in 633 CE in Madinah (Goring, 1995).

The Qur'an consists of 114 Qur'anic chapters – surahs of different length, content and containing different teachings, injunctions, and principles. There are 86 Makkan surahs and 28 coming from the period after the Hijrah of the Prophet to Madinah. Each surah is made up of a number of statements – ayah. There are 6,218 ayah, 77,437 words, and 321,000 words in the Qur'an (Abdul-Raof, 2001).

The general purpose of the Qur'an is to call people to the right way of life, which is in accordance with reality revealed by God. The Book illuminates God's true guidance, which has often been lost through man's negligence and heedlessness or distorted by his wicked perversity (A'la Mawdudi, 2003).

As mentioned already, the Holy Book contains and actually is itself a revelation of the ultimate truth to humankind. What is necessary to understand Islam and its ethical conducts properly is to realize that the revelation of the Qur'an is not limited only to the sacred text, but it includes also casting the meaning into the heart of the Prophet or inspiring it in his mind and talking to the Prophet from behind a *hījab* (veil) (Abdul-Roaf, 2003). The above is the direct reason for the importance of the Prophet's deeds, acting, and sayings, which record is embodied in the Sunnah, which is considered a revealed truth as well.

The first and ultimate source of Islamic ethics is naturally the Qur'an. In this sense, the Qur'an gives absolute answers to questions regarding the proper way of life for a Muslim person. As Kevin Reinhart points out, it should be recognized that the holy book of Muslims rallies Muslims to act rightly and reframes their moral knowledge in a context of retribution

and reward in this world, and judgment and subsequent punishment and reward in the next (Reinhart, 2001).

Traditionally the ethical content of the Qur'an has been divided into several categories according to their subject matter. The first category is dedicated to general principles that are, as Donaldson describes them, enunciated in the Qur'an to govern the conduct of the Prophet himself and all the believers. These principles are based on the initial assumption that Allah created both men and women and that He sees, hears, and knows everything they do (Donaldson, 1953). Thus, a good Muslim should exercise the general virtues revealed to him or her in the form of a habit. Among the general principles, one finds the imperatives to fulfill the duty to Allah, to be moderate, to forgive etc. The Qur'an also guides in the form of exhortations to particular virtues like humility, honesty, giving to the poor, kindness, etc., and condemnations of vices like boasting, blasphemy, or slander. Moreover, because Islam covers all spheres of life, there are also regulations for the Muslim community, i.e., social conduct, to be found in the Qur'an. How to deal with orphans, precede divorces, or justly perform the heritage cases – all of these are just examples of the moral, social manner defined on the pages of the holy book (Donaldson, 1953).

The word "sunnah", according to Arabic lexicographers, means "away, course, rule, mode, or manner, of acting or conduct of life" (Azami, 1992). Its main connotation, however, is the model behavior of the Prophet Muhammad. Closely connected to the Sunnah is the term hadith, which general sense has evolved after the introduction of Islam into traditions reporting Prophet's actions and sayings, or in other words, the narrations of the life of the Prophet.

Since in the Qur'an, one may find just a few concrete indications addressing the specific questions of everyday life, the example given by the Prophet has, so to say, completed the Qur'an in this respect and has become the second absolute source of correct Muslim morality. In other words, for devout Muslims, faith primarily means the ordering of their lives according to a conscious imitation of the action of the Prophet Muhammad. The Sunnah is commonly adopted as an indisputable part of the revelation.

George Hourani (1985) quite rightly claims that standards of conduct and character in any society are derived from several sources: from religious prescriptions, custom, model individuals such as prophets, parents, and friends, but also from the value decisions of everyone judge their own behavior for themselves and others in the future. Thus, reason inevitably is the third source of Islamic ethics. For, the richness of moral facts makes it impossible to solve every particular dilemma by referring only to the revelation, i.e., the Qur'an and sunnah.

The reason, Arabic *'aql*, was recognized by the Muslim thinkers as a capacity to understand the things of both natural and abstract nature. Human free will is that what distinguished them from animals. Moreover, the *'aql mustafād* – one of the recognized aspects of reason refers to the human's intellect as a perfect gift from the Absolute, the "Dispenser of Forms" in the universe (Donaldson, 1953). In time, the relation between the scripture revelation and the reason/reality revelation within what should be a truthful Islam had become a subject of intense religious debates, which, in consequence, brought about certain divisions within the doctrine. According to Hourani, there are five different configurations of the amount of reason that is to be employed into the true and factual Islam, i.e., (1) revelation supplemented by independent reason (Abū Ḥanīfa and Mālik); (2) revelation supplemented by dependent reason (Shāfi'i, Al-Ghazālī); (3) revelation alone

(Ibn Ḥanbal); (4) revelation extended by imāms (Shi'a Islam); and finally (5) reason as prior to revelation (Muslim philosophers: Fārābī, Ibn Sīnā, Ibn Rushd) (Hourani, 1985).

It should be recognized, however, that the above classification expresses relatively minor differences. The ultimate source of the creed for all of these approaches is the Qur'an and the Sunnah. The differences are due to interpretations in some quite limited cases.

3. HISTORICAL DEVELOPMENT OF ETHICAL THEORIES IN ISLAM

There is a well-established consensus among Islamic scholars that, historically speaking, Islamic ethics have gone through four basic phases, namely (1) scriptural morality, (2) theological ethics, (3) philosophical ethics, and (4) religious ethics.

Explaining the first phase of development of Muslim ethics, Fakhry (1994) rightly claims that any ethical theory presupposes an advanced stage of intellectual systematism and sophistication. Before the advent of Islamic theology and philosophy in the eighth and ninth century CE, such activity was virtually foreclosed. Of course, the early commentators of the Qur'an, the *Mahaddithūn* (Traditionists), and jurist engaged in analysis and interpretation, but this intellectual activity was closely linked to the direct revelation, i.e., the Qur'an and the Sunnah, and, as Fakhry further continues, lacked, on this account, the character of genuine dialectical or rational discourse, with its double imperative of coherence and comprehensiveness. What emerged as an outcome of these analyses and interpretations was rather a series of moral insights or reflections than an ethical theory in the strict sense (Fakhry, 1994).

The Qur'anic ethos is naturally a very vague and elusive concept that may be elucidated probably only by pointing at the central, very general principles and values promoted by the Holy Scripture. Hence, the general principles and values of the Qur'an presented here are certain abstractions from the particular incentives and rules expressed in the particular Qur'anic verses regarding virtuous or vicious life. One should also remember, as Reinhart (2001) rightly points out, that the categorical distinction between religion and ethics so significant for Western philosophical ethics is unnatural to the Qur'an. For this reason, virtuous Muslim conduct ought to be always considered and analyzed within the socio-religious imperatives of Islam.

The beginnings of creating a more sophisticated and complex moral creed took place in the eighth century CE when the *Mutakalimūn* (Islamic theologians) attempted to create a coherent theory or a comprehensive ethical system. Because these theories were ultimately grounded in the *Qur'an* and Traditions with heavy reliance on their categories and methods, they are labeled with the predicate "theological." The two major protagonists of these theories were the *Muᶜtazilites*, who formulated the rationalistic Islamic ethical system with basic deontological presuppositions between the eighth and tenth centuries, and the *Ashᶜarites*, who stood for a rigorous "voluntarist" system of morality, which did not reject the discursive methods of the philosophers altogether but remained thoroughly committed to the Qur'anic concept of omnipotent Deity, Who is the sole Creator and Lawgiver, as well as the ultimate source of being and goodness in the world (Fakhry, 1994).

The development of Islamic ethics kept progressing and evolving and entered its philosophical phase in the ninth CE. From the ninth century CE and beyond, many texts containing a lot of Greek ethical material were in circulation in the Islamic world. Yegane Shayegan argues (1996) that the movement of Greek thought eastwards resulted from two underlying forces: the Christianisation of the Roman Empire and the internationalization of

the Sassanian Empire. In the already catholic Roman Empire, the traditional Hellenistic philosophy was, generally speaking, banned. The Christian thinkers rejected the Platonic dialogues, especially in their Proclean interpretations. They were identified with pagan polytheism and thus unacceptable. The influence of Hellenistic philosophy, especially logic, on Islamic ethics was significant between the ninth and twelfth centuries. Seemingly, the undertaking of translating and critically reviewing Greek philosophy was more efficiently accomplished at a later period.

There are two philosophers, which especially deserve attention regarding their ethical though, namely, Al-Fārābī, and Ibn Sīnā.

Al-Fārābī's conception of ethics is conditioned by a broad political viewpoint, which is partly Aristotelian and partly Platonic. Following this tradition, Al-Fārābī distinguished several powers of the soul, i.e., the nutritive, the sensitive, the imaginative, the concupiscent, and the rational. The latter possesses a characteristic ethical function because it is the power through which human being distinguishes between right and wrong actions (Fakhry, 1994). In other words, according to Al-Fārābī, the rules of conduct are taught by reason. As Donaldson puts it: "It is reason that decides, most fittingly, whether a thing is good or evil, for the highest virtue consists in knowledge" (1953). It seems that Al-Fārābī's God bears many of the features of the Hellenistic Absolute.

Nevertheless, his idea of God perfectly coincides with the God of Islam. He is an absolutely good being full of wisdom, life, insight, might and will, beauty, excellence, and brightness. He is the first willing being and the first object of all desire. In the knowledge of this being, Al-Fārābī sees the end of philosophy and the ultimate source of human obligation consisting in rising, as far as human force permits it, into likeness with Allah (Donaldson, 1953).

Ibn Sīnā, known in the West better as Avicenna, is considered the most influential Arabic philosopher. In his philosophical system, one finds traces of Platonism, Aristotelianism, Neo-Platonism, Galenism, and Fārābīanism, and other Greek and Islamic ideas. However, as Inati demonstrates, his system is unique, and it cannot be said that it follows any of the above schools (Inati, 1996). According to some Islamic thinkers, Avicenna's philosophy went too far from the Islamic *ʿAqīdah* (creed). One of those critics was Al-Ghazālī, who made Avicenna's system the main target of his *Incoherence of Philosophers*, mainly because of the philosopher's retention of Aristotle's doctrine of the world's eternity inconsistent with his claim that God was the Creator of the universe. Al-Ghazālī argued further that Avicenna's related affirmations of the necessity of causation and universality of God's knowledge made miracles impossible and divine governance too impersonal to deserve the name (Goodman, 1999). Here again, the dispute comes down to the reason – revelation relation. Philosopher Avicenna naturally gives priority to the former.

The final form of Islamic ethics still in force is religious ethics that emerged as a particular reaction to the philosophical moral theories. In the reason-revelation dialectics so crucial for the formation of the proper ethical theory and conduct, religious systems favor revelation, which does not mean that they deny it. On the contrary, its significance is recognized but merely as a dependent supplement to the unconcealed truth of the revelation.

Religious ethical theories, which gain their mature form in the eleventh century, are ultimately grounded in the Quranic conception of the human being and their position in the universe. These theories, as Hourani argues, differ somewhat from scriptural morality in that their protagonists had received the impact of Greek philosophy and Islamic theology. These systems derive from the experiences of their intellectual predecessors – they

incorporate the Quranic worldview, theological concepts, and philosophical categories. Thus, such a system of ethics emerges as the most complex and the most characteristically Islamic (Hourani, 1979).

4. THE CONFLUENCE OF ISLAMIC ETHICS AND ISLAMIC LAW

Both "shari'a" and "*fiqh"* have been loosely translated into English as "Islamic law". These terms, however, are not synonymous in the Arabic language or within early Islamic scholarship. *Fiqh*, as Philips reports, literally means the true understanding of what is intended. It also has a technical jurisprudential meaning, namely, "the science of deducing Islamic laws from evidence found in the sources of Islamic law. By extension, it also means the body of Islamic laws so deduced" (Philips, 2003).

Shari'a, on the other hand, which literary denotes a waterhole where animals gather daily to drink or the straight path, technically refers to "the sum total of Islamic laws which were revealed to the Prophet Muhammad, and which are recorded in the Qur'an as well as deducible from the Prophet's divinely guided lifestyle (called the Sunnah)" (Philips, 2003). The fundamental difference, hence, between the two is that the unchangeable *Sharia* is the body of revealed laws both in the Qur'an and the Sunnah, while more fluid *Fiqh* is related to the human understanding and interpretation of the absolute divine law. *Sharia*, by its nature, is rather general and lays down basic principles, while the laws of *Fiqh* tend to deal with more particular issues – they demonstrate how the general principles of Shari'a should be applied or implemented in given circumstances (Philips, 2003).

The Shari'a law possesses a very specific structure that differs significantly from the Western laic or canonical law systems. Its unique structure is determined by the general and constitutive feature of Islam, i.e., it covers and defines all domains of human reality. On this account, Muslims believe that Shari'a contains or is identical to the natural law. Islamic law is applied to every issue concerning both human relation with Allah and human relation towards other human beings. Moreover, the holiness of the Shari'a, as was mentioned already, makes it impossible for a man to modify it. One must not question the clear recommendations of the Qur'an or the Sunnah. There is no possibility to change the law. There is, however a room for human reason to interpret it and apply it to human practice. That exactly shows that the dynamism of human understanding is crucial and inescapable.

Sharia is identified with the ideal code of behavior, and it has, in fact, a much broader scope and purpose than a simple legal system in the Western sense of the term. *Fiqh* not only regulates in meticulous detail the ritual practices of the faith and matters which could be classified as medical hygiene or social etiquette, but it is also, as Coulson demonstrates, a composite science of law and morality, whose exponents are the guardians of the Islamic conscience (Coulson, 2001). These *fuqahā'* are jurists who are extensively knowledgeable in *fiqh* to give detailed evidence for their legal/moral claims regarding the given legal/moral dilemma in the ultimate sources, i.e., the Qur'an and the Sunnah (Kamali, 2003). In other words, there seems to be no actual distinction between moral and legal commands and prohibitions. As Coulson puts it: "all acts and relationships are measured by a scale of moral evaluation" (2001, p. 83), and thus, are expressed in ethical terms. There are five categories that are employed for the evaluation of all acts:

1. Obligatory acts (*wājib*), such as the duty to perform the ritual prayer, pay *zakat*, and practice fasting.

2. Recommended acts (*mandūb*), which are not considered obligatory, such as supererogatory acts of charity, kindness, prayer etc.
3. Permitted actions (*halāl*), regarding which the law adopts a neutral stance, that is, there is no expectation of reward or punishment for such acts.
4. Acts that are discouraged and regarded as reprehensible (*makrūh*) but not strictly forbidden; Muslim jurists differ about what actions to include under this category.
5. Actions that are categorically forbidden (*harām*), such as murder, adultery, blasphemy, theft, intoxication etc. (Nanji, 2005).

These categories, as Nanji continues, are set within a dual framework of obligation: toward God and society. In each instance, transgression is perceived in both legal and theological/moral terms as constituting a crime as well as a sin (Nanji, 2005). This is probably the main difference between the western approach to ethics and law and the Islamic one. In other words, within the western framework, there are plenty of acts that are perceived as immoral but are not regulated by the law, like, e.g., adultery; in the Muslim world, at least in theory, such a discrepancy does not occur.

The above applies not only to the theory of Islamic ethics and general rules of conduct but also to particular branches of ethics, including business and managerial ethics and the individuals working in the field.

5. ISLAMIC MANAGERIAL ETHICS

Considering the rules for the proper conduct for Muslims within the business environment, a fundamental question comes to mind, namely how such an ethic should look like structurally, i.e., whether it should be just inferred from and built upon western business ethics by adding particular for the faith categories, or whether such ethic should be originally constructed and derived from Islamic ethics and Islamic law. Due to the methodological specificity of creating theological and ethical arguments in Islam, the latter is the case. Moreover, the vast majority of scholars researching and writing about business and management-related moral conduct in Islam employ referring to the Qur'an as the final and ultimate validation method. Furthermore, the fundamental principle of Tawhid – the oneness of God that is extrapolated into the oneness of all human activity under God's commands demonstrates the need for creating divergent Islamic business and managerial ethics. When analyzing Islamic management practices, Salleh writes: "if we neglected to organize our life not according to the Sharia, we are losing. The fact is whatever work we do is worship" (2019). Badawi (2016) writes that the idea behind the Islamic moral conduct as defined by Islamic ethics and Sharia is to create a pious Islamic personality. In this respect, teaching is not very different from Aristotle's virtue ethics.

The sources of virtues one should learn and practice in order to become a morally good manager are to be found in the Qur'an and could be extrapolated to fit the purpose of contemporary business practices, including the behavior of managers. Ogunbado and Umar (2019) created a list containing the characteristics of a good Muslim manager. The virtues such a person should possess are the following: trustworthiness and honesty, fairness, competence, accountability (*muhāsabah*), proper supervision (*murāqabah*), benevolence (*ihsan*), strong will and self-determination, and selflessness (Ogunbado, Umar, 2019).

However, it should be stated that Islamic managerial ethics is not limited to a list of virtues one should exercise. From a more general point of view, Islamic ethics is an extreme example of a deontological normative system – it is, after all, written down into a legal

system of Shari'a. In consequence, Islamic business and managerial ethics bear the same quality of sharply defined concepts of right and wrong by the Qur'an and the Sunnah, as well as, to a smaller extent, the traditional consensus regarding the cases not addressed by the first two ultimate sources of Islamic ethics.

The concepts of right (*khair*) and wrong (*sharr*) are well defined in Islam. Everything that is *makrūh* (reprehensible) and *harām* (forbidden) by the Qur'an and tradition is wrong; what is *wājib* (obligatory), *mandūb* (recommended), and *halāl* (permitted) is considered to be right. Of course, the moral reality is complex and constantly changing, which also applies to managerial circumstances, and therefore things often are not so morally straightforward. By their nature, human beings, managers included, cannot avoid wrongdoing. Islam recognizes that fact and argues that the equilibrium or certain balance between right and wrong should be maintained (Abbas et al., 2012).

In order to depict the process of how particular characteristics or virtues are required for proper managerial attitude, I will analyze the feature of truthfulness and honesty as an example. The first step for any Islamic moral consideration is to look for clues or guidelines in the first and ultimate source of Islamic ethics, i.e., the Qur'an. Among many surahs dealing with the topic, there is one that stands out, namely surah As-Saf, where we read: "How despicable it is in the sight of Allah that you say what you do not do!" (Qur'an, 2021). It is clear that lying is either reprehensible or forbidden and hence wrong. There are, of course, many hadiths supporting that claim. Abbas et al., for example, refer to a Bukhari narration that reads: "When I enquired you what he (i.e., Muhammad) ordered you, you replied that he ordered you to establish the prayer, to speak the truth, to be chaste, to keep promises and to pay back trusts" (Abbas, et al., 2012). On that account, a good Muslim manager must not lie because it is wrong (*makrūh* or *harām*) and should adopt and exercise the virtue of truthfulness and honesty.

6. CONCLUSIONS

The paper's goal was to present to the reader Islamic normative ethics as a general phenomenon and in its business, or more specifically, managerial application. The focus was given to a particular method of moral validation that is different from the majority of western normative theories. The basis of this characteristic is the Muslim belief that the Qur'an is the direct word of God and, therefore, it is the unquestioned and ultimate source of moral conduct. The same applies to the Sunnah – the collection of narrations of the holiest of men, according to Islam, the Prophet Muhammad.

Due to this structural difference on the general level, there are differences between applied ethics, including managerial ethics. Here, just like in reflecting and judging general dilemmas, the argumentation always begins with the Qur'an and the right and wrong how it defines them. Still, despite structural differences, the outcome in the form of virtues and deontological limitations defined for the morally proper managerial behavior does not differ much from the western findings and guidelines.

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MANAGEMENT CONTROL SYSTEM IN THE CONTEXT OF SMES

Several researchers have been concerned with management control, others have analyzed the specificities of SMEs, but research relating to management control in SMEs is still scarce. Management control is one of the foundations of company management and performance, it provides the visibility necessary to coordinate, plan and judge the actions of company stakeholders. Stemming from industrial accounting, it now appears as a means of controlling the complexity of organizations and mobilizing skills. Thus, the purpose of management control systems, in particular, is to present managers with methods and tools enabling them to provide them with useful information for decision-making.
The objective of this work is twofolded: – identify the specific features of SMEs which may have an influence on their management system and therefore on their management control practices; – draw up an overview of the different management control tools and practices adapted to SMEs to finally confirm that management control in SMEs exists.

Keywords: management control; specificities of SMEs, cost accounting; forecasting tools; dashboard.

1. INTRODUCTION

The current environment is marked by technological and economic turmoil. Their diversity and density make the management of companies more complex and uncertain. To control these phenomena, Small and medium-sized enterprises (SMEs) must adapt their structures and operating methods, also making it necessary to modify information systems, and therefore the nature of management control.

In a developing economy like that of Morocco, the SME certainly occupies a place of great importance for its effective participation in the promotion of social dimension and economic development. It is for this reason that special attention must be given to this category of companies in terms of management and especially management control, which constitutes a means of improving immediate profitability and of increasing development.

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Management control in an SME is as important as in a large company. Especially since SMEs have an advantage over large companies, it is the proximity of the manager and his employees which does not imply a complex organization to control or guide very diverse or distant teams. A popular idea among SMEs is that the management control function is only useful for large companies. However, many SMEs do management control without knowing it or naming it. The objective of this work is to deal with the subject of management control within SMEs.

Our research aims to study control practices in emerging countries and specifically in Morocco. It is important to note that studies on SMEs in Morocco are few, in that our research allows to understand the functioning of SMEs to stimulate future research. While drawing inspiration from research carried out by Rigalma & Torra (2021) on large international companies in the Atlantic Free Zone Kenitra in Morocco. The purpose of this research is mainly to identify and analyze the dissemination of management control practices of small and medium-sized enterprises within the framework of Morocco.

To answer the question: what is management control in the case of SMEs, we first propose a review of the management control literature and then identify the specificities of SMEs that may have an influence on their management system and therefore on their management control practices and to draw up, secondly, an overview of the various management control tools and practices adapted to SMEs to finally confirm that management control in SMEs exists. The authors of this article followed the deductive method in their research, starting with a review of the literature with a comparison between the theoretical context of research in the field of management control and that of the development of small and medium-sized enterprises.

2. MANAGEMENT CONTROL: LITERATURE REVIEW

The concept of management control has evolved a lot over the past decade. The aim here is to give a definition of the concept of management control, and to try to define its scope.

a) Appearance of management control

"The control of activities and the field of management control that results from it are rather correlated with the industrialization phase of the end of the 19th century and especially the beginning of the 20th century" (Alazard & Separi, 2010). The evolution of the economic and technological environment of the company and the development in the organizational structures of production were at the origin of the information needs and the design of the cost calculation and management control systems in the company.

"Organizational changes in production explain the changing needs in cost calculation. It is the transition from the putting-out system (production outsourced to the workers) to the factory system (production grouped in a factory)" (Alazard & Separi, 2007). Several stages mark the emergence and evolution of management control, each characterized by a gradual improvement of objectives, tools, and a specific vocabulary.

The costing system has been around since the emergence of the first organizations. As long as there is an economic activity. But its real development dates back to the industrial revolution because of organizational changes in production.

It was in the 17th and 18th centuries that the outsourced model of production putting out system (or sponsored subcontracting) experienced a great boom, the producer entrusting

the raw materials and the work to the artisans who made the finished products. Here the cost calculation is determined by the "cost price" compared to the purchase price of raw materials. At the same time, the vocabulary applied in the cost calculation system evolves in several stages.

From the 19th century, the production system of grouped factories became the most dominant model or "factory" with the development of new technologies and mass production using machines concentrated in a factory. At this stage, the cost calculation becomes more than necessary, the entrepreneur increasingly seeks to control his costs.

2.1. The industrial accounting stage

The notion of management control was born with the boom in industrial activity in the 19th century. But researchers only speak at that time of "industrial accounting" allowing the manager to assess his production costs (costs of transformation of raw materials, costs of wear of machines, wages, etc.) in order to help him/her fix its prices compared to its competitors. It consists in measuring the costs of the internal flows of the production process before determining the production costs of the manufactured products, that is to say the costs of processing raw materials by the machines of the factory with workers.

> Around 1915 with the OST (Scientific Organization of Labor) proposed by F. Taylor, the accounts were refined, segmented activities, worked out standards (standard costs, pre-established costs), calculated deviations from standards and checked them. Results, responsibilities. Accounting becomes operational cost in order to forecast and verify the achievements of all organizations, not just industrial ones (Alazard & Separi, 2010).

2.2. The cost accounting stage

It was at the beginning of the twentieth century, with the increase in the size and diversification of production units of companies, that "accounting becomes operational cost". It allows the manager, in addition to the basic function of industrial accounting, to forecast and verify industrial achievements on the one hand, and the entire organization on the other. It is the beginning of the time of the rationalization of work, researchers break down the movements and they measure the operating times to divide the tasks and increase the outputs, the division of the very hierarchical organization, is based on the establishment of standards and rules imposed on performers.

"Accounting becomes operational cost in order to forecast and verify the achievements of all organizations, not just industrial ones" (Alazard & Sépari, 2010). The concepts on which this model is based are:

- economies of scale: manufacturing in large units to increase productivity and reduce unit costs by spreading fixed costs over large quantities;
- standardization: homogeneity of products without differentiation;
- division of labor: breakdown and segmentation of tasks;
- execution/control: measurement of activity and job performance, comparison with established standards.

As a result, the organization is evolving as a very complex profit center that needs a new management and control tool. Hence the birth of operational cost accounting with the aim: monitoring the achievements of organizations compared to pre-established standards.

b) Evolution of management control

The emergence of this discipline is part of an evolution in the technical, economic and social world. The first evolution of management control begins with the increase in the size of the production unit and its diversification. Hence the need to delegate responsibilities and tasks while controlling the performers with the means of provisional and actual budgets to monitor achievements and measure gaps.

Taylor (1853–1915) introduced the notion of norm from which the idea of measuring deviations and handling by exceptions arose. Remote surveillance by numbers replaces, in any case partially, direct surveillance by the chiefs. Finally, Taylor tries to reconcile the individual interests of workers with the collective interests of the company through bonus systems. "If the first principles and methods of management control appeared between 1850 and 1910, in the United States and in Europe, practices were developed gradually according to the needs of companies" (Alazard & Separi, 2007).

Then, in a period of growth and with the development of products and services, management control becomes a real co-pilot and is positioned more and more as a decision-making tool to support managers and ensure them a good means of controlling their activities.

Changes in the business environment, both internal and external, make it necessary to reconsider the classic model and reduce management control to a cost analysis tool, focused on the internal constraints of the company. And not on its market constraints. Therefore, it becomes important to review this model in terms of its objectives and tools and to take into account the needs of users. Thus, management control is expanding: new methods and cost considerations attempt to overcome the shortcomings of traditional methods. "Social management control has amply developed through management and reporting systems implementing a structured set of dashboards with social indicators" (Peretti, Piedtrement, 2013).

Faced with a constantly changing economic environment that requires greater responsiveness, cost control within companies has become essential.

The development of commerce, industry and even the economic environment has created new dimensions in business. This development has prompted managers to review their strategies and the way they manage their businesses.

"Knowledge of costs and their evolution, analysis of assumptions and associated calculation systems, are all essential decision tools for any manager who exercises responsibilities" (Mendoza, Cauvin, Delmond, Dobler, Malleret, 2004). Thus, each entrepreneur and each decision-maker within a company must know how to control his expenses in the most optimal way possible.

> From the 1980s, researchers saw the emergence of new organizational structures in companies, structures on which management control began to place management systems similar to those it used on the traditional structure in responsibility centers: identification of a manager, setting of objectives, definition of performance measurement indicators, construction of budgets, development of action plans (Löning, Malleret, Méric, Pesqueux, 2008).

Thus, in 1903, the breakeven point made its appearance in the economic calculation in the United States. Modern management control is no longer content with simply controlling the allocation and use of resources to achieve objectives, it is now part of a continuous

improvement process. “Inspired by the Deming wheel (plan – Do – Check – act), the four dimensions of management control become as illustrated in the figure below: forecast – measure – react – progress” » (Bouin X. and Simon F-X, 2015, p.17).

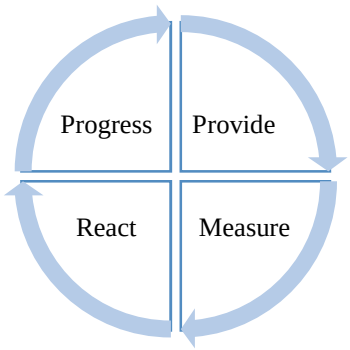

Figure 1. The 4 dimensions of modern management control

Source: (Bouin, Simon, 2015).

The Deming wheel highlights the four stages necessary for a good organization of:

- setting objectives and determining actions to achieve the objectives: this is the planning phase;
- the implementation of actions as planned: this is the deployment (or implementation) phase;
- the evaluation of the gaps between the objectives and the planned actions and what has been achieved: this is the evaluation (or control) phase;
- the implementation of improvement actions aimed at eliminating the gaps: this is the improvement phase.

“The essence of a successful organization”, explains Deming, is therefore to continuously improve, both in terms of actions carried out by staff and those initiated by company management.

At the local level of carrying out production operations: it is mainly the problem-solving process.

At the level of product and policy design, that is, at the level of the management of the company: this is the wheel of Deming (Barouche, 2010).

Following the four stages of the Deming wheel creates the conditions for the structure to improve steadily. The management controller becomes the coordinator of management control; the management controller must master the management tools in a process of continuous improvement. It is the role of each manager to bring his department and activity under control.

“In the 1930s, the discovery of major frauds involving the liability of auditors in the United States and the very large volume of transactions to be audited gave decisive impetus to the shaping of a very precise methodology” (Combe, Labrousse, 1997).

In 1965, Anthony gave a classic definition of management control:

> Management control is the process by which managers ensure that resources are obtained and used effectively (relative to objectives) and efficient (relative to

objectives. Means employed) to achieve the objectives of the organization (Anthony, Dearden, 1976).

Around the 1980s, the gradual development of management control brought about new performance assessment methods based on the notion of process and activity, to meet the company's increased need for adaptation and responsiveness. In a highly competitive environment, where customer satisfaction and competitiveness are the common thread of a business performance analysis.

The control system will of course focus on monitoring expected results, through performance indicators, but also on monitoring associated action plans to achieve them with management indicators (Selmer, 2003).

Moreover, since the 1980s, so-called classic or traditional methods of calculating costs have caused much ink to flow, particularly in the way in which the allocation of indirect costs is made, which is often subjective and far from reality.

“In addition, traditional accounting methods focus on the cost of finished products. However, the very concept of a product is currently the subject of several questions” (Mendoza, Cauvin, Delmond, Dobler and Malleret, 2004). Thus, under the influence of all these factors, the scope of costing has grown considerably in its scope.

Indeed, the costing was essentially about determining the costs of the products. However, today we have moved from the concept of the cost of a product to that of the object of cost. Knowing the cost price of its products is certainly a major issue for a company, but it is not the only one. Costing has become multidimensional.

In 1988 Antony will come back to his first definition and will propose an approach in which, on the one hand, Antony brings a new notion, “vlinking management control to the company's strategy and, on the other hand, introducing a new form of management”. Relationship, influence:

Management control is the process by which managers influence other members of the organization to apply strategies. It therefore appears, according to Antony, the manager is the initiator and the main actor of the control process, which suggests the paradox that he would have to entrust management control to the controllers alone.

“H. Bouquin will see in the evolution of Anthony's definition the emergence of the informal, which allows him to describe the management control function as” a vector of behavior regulation in organizations (Burlaud, Jougleux, Livian, 2007). Bouquin thus proposes to define management control as: “A process, part of the management process, whose mission is to install and maintain around managers, the conditions enabling them to identify relevant objectives and to maximize the chances of achieving them as long as they remain relevant…”.

To control the evolution of costs, only the calculation of product costs is not sufficient. It is necessary to understand how this cost is constituted and to appeal to concepts such as, for example, that of the cost of activities. Finally, new cost determination tools have appeared. Developed in the United States (the ABC method) or in Japan (the target cost), they are gradually being adopted by French companies.

These methods are not only a sophistication over traditional methods. They suggest new representations of the company and generate a new problem: going beyond the calculation of costs to move towards their management. The ABC's are based on the idea that you don't manage costs, but activities incur costs.

It is a full cost method that makes it possible to treat indirect costs according to a logic of consumption and no longer of distribution. Cost objects (product, service, distribution channel, customer etc.) consume activities (set of tasks), which consume resources (human and technical) which have a cost. The causal link is thus established through the activity between the resource and the cost object (Selmer, 2008).

"ABC is a method that models the business around activities. Nowadays, developing businesses and conquering new markets requires more than ever control and therefore knowledge of all costs" (Mendoza, Cauvin, Delmond, Dobler, Malleret, 2004). From there, the cost structure of enterprises has undergone an extensive advancement of its components, which has made their control more and more complex. Therefore, the mere calculation of the cost of products is no longer sufficient to control the evolution of costs. It is necessary to understand how this cost is constituted and to use concepts such as the cost of activities.

Since the mid-1990s, debates have focused on a change in control in the implementation process and in this perspective the characteristics of the management controller, his missions, his skills, his hierarchical attachment constitute a practical and theoretical questioning (Burlaud, Jougleux, Livian, 2007).

In (1998) Bouquin redefined management control as the intersection of three fundamental missions:

- hinge between strategy and day-to-day life, of which it must ensure the interaction by ensuring that current actions are consistent with the strategy, but also by allowing managers to change their strategic approach based on the facts observed;
- vector of orientation of the behavior of the actors, perceived and in a way instituted as autonomous decision-makers, through the delegated management of the resource-results pair;
- modeling of the relationships between the results pursued and the resources to be mobilized and consumed in order to achieve them.

Today, management control therefore goes well beyond the area of competence of the management controller and very strongly involves human resources directors, whose mission with the highest added value consists precisely in mobilizing men in order to achieve certain objectives. This corresponds to a general evolution of managerial models which consider that human resources, through their skills and knowledge, constitute key business resources, creating value and competitive advantage.

This involvement of human resources directors in the field of social management control for the benefit of the performance of the result, requiring to rely on organizational and behavioral contingency factors places management control at the heart of our research model. Indeed, it makes it possible to develop human resources in line with the results sought by the company.

c) Definition of management control

Desire-Luciani and al. (2013) have already clarified that the management control system is often misunderstood because there is a poor understanding of the word control. This leads us to define the term control before apprehending the management control system.

2.3. Definition of control

According to Bouquin (2011), control refers to a common idea of a standard: standard of action, standard of behavior, standard of result. To this end, control can be oriented either towards action, result or behavior. When the control relates to the action or the result, it

reflects the idea of verification, monitoring, inspection and evaluation. It therefore makes it possible to set up an analysis system by which organizations guide their administration and attempt to achieve their objectives (Bouquin, 2011). It also aims to know the result obtained either with regard to quantified data or with regard to a criterion.

Control is not only used to guide action because, Follett (1932) clarified that it is mostly used to think Fiol (2005); thus, it depends on the ability to make the controller's ideas converge with the ideas of other managers who are also involved in the organization. It is then conveyed under the idea of order regulation in the event of disorder (Tannenbaum, 1968; Chiapello, 1996). It also reduces the uncertainties of individuals and the degrees of freedom of individuals (Lebas and Weigenstein, 1986); behavior is thus highlighted.

In view of these three orientations, action – behavior – result, control is considered to be the key to the functioning of the organization, the goal of engineering and the guarantor of effective unity (Bouquin, 2005).

2.4. Definition of management control

After clarifying the term control, the authors of this article will discuss management control. Several authors have defined management control. The authors of this article are focusing on four works because they are complementary.

According to the precursor, management control is “the process by which managers obtain the assurance that resources will be obtained and used effectively and efficiently in order to achieve the objectives of the organization” (Anthony, 1965).

Management control is also seen as the system that captures and processes information about the organization, a system of accountability and feedback designed to provide assurance that the company adapts to changes in its environment, that the behavior of its staff at work is measured by reference to a system of operational objectives consistent with the overall objectives (Lowe, 1971).

In addition, management control is the set of devices, procedures, incentives, various regulations, but also factors that constitute what could be qualified as invisible devices allowing the manager to have the assurance that strategic choices and current actions are consistent (Bouquin, 2010).

Note that these three authors focus their attention on different but complementary notions for the present study. To this end, the first definition is based on obtaining resources, their use and the achievement of objectives. The second definition specifies the various systems necessary for a better implementation of management control. This second definition makes it possible to consider management control as a system. It also emphasizes the actor's behavior. It further specifies that the environment can influence management control. However, the latter must be able to adapt to change. Finally, this second definition specifies that there must be consistency between the objectives set by management control. The third definition is based on all the mechanisms necessary for the consistency of management control.

It is therefore about procedures, incentives, various regulations as well as invisible devices. Invisible devices push actors to interpret the same facts in various ways, to discard certain behaviors in favor of others, to accept certain practices and contest others, to adhere to certain goals and to consider others as unacceptable (Bouquin, 2010).

These three apprehensions join the work of Malmi and Brown (2008). Management control is perceived by Malmi and Brown (2008) according to the desired results and it takes into account the links between several elements. Management control is the set of

formal arrangements and also informal control modes. It is the set of accounting and non-accounting processes, values, rules that allow management to try to control behavior and decisions. It then ensures that there is consistency between the objectives and the strategy of the organization. It establishes a link between the tools, the control systems and the actors responsible for implementation. Therefore, these authors refer to management control as a "package" that facilitates the development of other controls, the achievement of organizational objectives, and the improvement of control activities. The "package" brings together different systems: control by culture (clans values symbols); administrative control (governance, organizational structure, policy and procedure); cyber control (budget, financial measure, non-financial measure, hybrid measure); managerial control (reward and remuneration); strategic control (long-term planning/operational action plan). Thus, this "package" takes into account the real impacts of management control; it does not offer a definitive solution to all problems, but it facilitates and stimulates discussion. The work of Malmi and Brown (2008) is complementary with the definitions given previously.

This study draws on Malmi and Brown (2008) to clarify management control. It is then considered to be the set of visible (formal) and invisible (informal) devices making it possible to ensure the coherence of the system, to obtain the resources, to use them effectively and efficiently and to guide behavior. Actors for the achievement of the objectives of the organization. This definition focuses on three elements: the coherence of the system, the visible devices and the invisible devices.

3. SMES AS A FIELD OF RESEARCH

Research on SMEs began to develop from the end of the 1970s. At that time, researchers began to identify the specificities of SMEs towards large companies. Gradually, this research begins to multiply, structure and organize itself in order to constitute an object of research. Following this increase, two theoretical currents made their appearance: the first takes into account the specificity of SMEs (Julien, Marchesnay, 1988), and tries to unify it using a single approach. The second adopts a contingent approach, according to this current it is impossible to consider that there is a single theory of SMEs. In our research, these authors adopted the trend that follows the specificities of SMEs, while highlighting the diversity of cases. These authors cannot ignore a contingent approach because SMEs are heterogeneous, but without forgetting their common similarities. Indeed, these authors consider that the central role of the manager is an invariant and specific characteristic of SMEs despite their heterogeneity. Through this approach, these authors try to create an analytical framework reconciling "specificity" and "diversity" (Torrès, 1997).

3.1. Definition of SME

At the outset, it must be recognized that SMEs are not large companies in miniature. Previous research has clearly shown that an SME "can no longer be considered as a simple reduced model of an archetype of companies It constitutes a being that has its own reality and its own existence" (Julien, 1988). However, there is no single definition of SMEs but several typologies have been designed by different researchers in order to find common similarities. There are traditional typologies based on quantitative criteria. Also, several authors have sought to go beyond these by taking into account qualitative criteria allowing a more complex and more global typology. Therefore, it is difficult to define them, there are several definitions of SMEs developed according to different contexts. In what follows

these authors refer to the definition of Julien (1988) for whom the small and medium-sized enterprise “is above all a legally, if not financially independent enterprise, operating in the primary, manufacturing or service sectors, and whose functions of responsibilities most often fall on a person who is generally the sole owner of the capital”.

In Morocco, According to the first article of law 53-00 forming “Charter of the SME” of July 23, 2002, the SME is a company managed and / or administered directly by the natural persons who are the owners, co-owners or shareholders. And which is not held at more than 25% of the capital or of the voting rights by a company, or jointly by several companies, not corresponding to the definition of an SME (this threshold may, however, be exceeded when the company is owned by collective investment funds, capital investment companies, risk capital organizations, financial organizations authorized to call on public savings - provided that they do not exercise, as a individually or jointly, no control over the company).

In addition, SMEs must meet the following two conditions:

- have a permanent workforce not exceeding 200 people,
- have achieved, during the last two years, either a turnover excluding tax of less than DH 75 million, or a balance sheet total of less than DH 50 million.

This same charter also proposes specific criteria for newly created companies (i.e. those which have been in existence for less than two years): companies which have undertaken an initial investment program of less than 25 million DH are considered as SMEs. And respecting an investment ratio per job of less than 250,000 DH.

3.2. Importance of SMEs in Morocco

According to the Federation of SMEs (affiliated to the CGEM), Moroccan SMEs constitute 95% of the economic fabric of the country and are located for 72% in trade and services.

In 2002, they would have employed more than 50% of the employees of the private sector and would have contributed up to 31% to Moroccan exports and 51% to national private investments. However, while they represent around 40% of national production, they only participate up to 10% of the country's added value. (Editor's note: quantitative data to be taken with caution, due to the absence of reliable statistics and the importance of the informal economy in Morocco).

Major players in the Moroccan economy, SMEs suffer from many difficulties that hamper their upgrading:

- lack of transparency of accounts;
- under banking and difficulties in accessing financing (cost of credit and often crippling guarantees required);
- low productivity and cultural obstacles to improving competitiveness (strong centralization of decision-making power, low staffing rate, oral business culture, lack of rigorous accounting, insufficient financial culture);
- lack of preparation and international openness of managers.

Thus, in April 2004, according to A. Kessal (president of the SME Federation), out of the 70,000 SMEs affiliated to the National Social Security Fund (CNSS), only 40,000 filed for bankruptcy with the tax administration and 1,500 meet the necessary conditions for financing through traditional banking circuits.

At this stage of our research, it is essential to identify the specifics and characteristics of small businesses that may have an impact on the problematic of our research.

3.2.1. Size

SMEs are distinguished from large companies by their modest size. The best-known typologies are based on quantitative methods that refer to quantitative jobs (workforce and employees), assets or turnover. Julien and MarchesNay (1988) propose the distinction between three categories: the very small businesses that have a staff between one and nine employees, the small business between ten and forty-nine employees and the medium-sized enterprises between fifty-one hundred and eighty- Nineteen employees.

Indeed, the classification of companies by their size, differs from one country to another. Each country has its own definition of SMEs according to social, fiscal or legal regulations, but also within the same country each sector has its own size references. In this research, these authors consider as SMEs a company whose workforce is between thirty-one hundred people.

Characterized, by their small size in terms of activity and workforce, the volume of technical and financial resources made available to the leader within SMEs is limited. As a result, the size effect plays an important role in differences in management control practice and analytical accounting systems used within the SME.

3.2.2. The role of the leader

“An essential characteristic of a small business is the very special role that its leader plays” (Fallery, 1983). Several researchers affirm the very strong influence of the SME manager on his management system (Lefebvre, 1991). He is often the founder of his company, he has a strong tendency to personify the company according to his motivations and his personal and professional background (Coupal, 1994). He plays the role of director, manager, and manager. In general, SME managers, to make their decisions, rely exclusively on their own judgments, intuitions and experiences (Mintzberg, 1976). They are unwilling to delegate their power and responsibility to other actors, just as they have little recourse to a formalized management information system. These authors see that the management control system in the context of an SME is strongly conditioned by the owner-manager and represents his personal aspirations.

3.2.3. A simple structure

Small business is characterized by low specialization of tasks within the business. Specialization is usually accompanied by increased height.

According to Mintzberg (1982), as the firm grows, organizational levels increase and work becomes more specialized. In addition, Kalika's (1987) study of firm structure asserts that the smaller the firm, the less formalized processes there are and the more decisions are centralized with the owner-manager. The size and important role that the owner-manager plays and his retention in delegating his responsibilities to other actors has an effect on the structure of the company. SMEs have a simple, centralized structure that has a limited number of human and financial resources.

3.2.4. An underdeveloped information system

The SME management system is characterized, on the one hand, by an uncomplicated internal information system which is often standard and poorly organized and, on the other

hand, by a simple external information system. Contact and dialogue are the essential vector of information within SMEs. As authors have already noted, the structure of the SME is little formalized and little hierarchical. By the same token, information and communication systems are also little formalized. Information is often conveyed informally, operating through dialogue and direct contact (Mintzberg, 1982) which, for the manager, are best practices for exercising control.

Likewise, the external information system in SMEs is simple. It is represented by direct contact between the manager and the various players in his environment, consisting mainly of customers, suppliers and bankers.

3.2.5. Decision making

The small size of the firm and its simple structure often allow the boss to take matters into his own hands and promote rapid decision-making, which makes it possible to react quickly to environmental turbulence. The centralization of decision-making by the owner-manager means that the latter gives priority to the various operational tasks, which prevents a strategic vision in the medium or long term. Most of the time, decisions are made for the short term. According to a survey cited by Duchéneaut (1997), more than 70% of SME managers prefer intuition to forecasting and consider it very important in decision-making. Consequently, the decision-making function in an SME is done in the following way: Intuition – Decision – Action.

The SME is characterized by a concentration of management and a centralization of most decisions in a single individual, the owner-manager. The latter is keen to perform all functions, these authors are reluctant to delegate responsibilities, he wishes to retain complete control and decision-making is based mainly on his intuition. These different specificities of the SME allow to conclude that the function of management control in this one is a little instrumented function where the owner manager plays a very important role. Therefore, understanding the functioning of small and medium-sized enterprises requires knowledge of the profiles of their manager. These different findings allow us to build a basic theoretical framework for our research that must be validated subsequently by observing the field.

4. MANAGEMENT CONTROL AND SMES

Several researchers have been concerned with management control, others have analyzed the specificities of SMEs, but research relating to management control in SMEs is still scarce. In recent years, we have seen a number of studies on the existence of management control in the context of SMEs (Chapellier, 1997; Fernandez et al., 1996; Van Caillie, 2002; Lavigne, 2002; Nobre, 2001). These various studies are nevertheless contradictory, some show a good development of control tools in the context of small and medium-sized enterprises, others present more nuanced results. After having carried out a synthesis of several empirical studies, McMahon and Holms (1991) consider that the state of knowledge on this subject is insufficient.

Indeed, most of the existing studies deal with the application of a particular tool in the context of SMEs: Chadefaux (1991), for example, studies forecasts in SMEs with less than 500 employees through a survey carried out in of 1000 SMEs. This study shows that SMEs make predominantly short-term forecasts, and have no strategic objectives. Bescos (1991) presents through a critical analysis the contributions and the limits of the management tables

developed within the framework of SMEs. On the other hand, there is a series of studies which draws up a first assessment of the situation of management control in SMEs in a contingent approach. From these studies these authors can draw that the variables explaining the nature of management control in SMEs are defined by the size of the SME, the role of the entrepreneur and the characteristics of supply and demand defining the competitive space. In the following developments, these authors will try to draw up, through the existing literature, an overview of the various control tools implemented in SMEs.

4.1. The management control function in SMEs

The management control function in SMEs is often under-structured (Fournier, 1992). It is often equated with the accounting or financial function. Several studies show that, for most managers, the management control system is defined by the accounting system designed primarily to report to the tax authorities. However, these authors should not consider that the function of management control in an SME does not exist.

In this particular context, it is often associated with other functions. The position in the organization chart depends on the number of people and services put in place: on the one hand, it may be the accountant who draws up budgets and uses control techniques, and on the other hand, it is the accountant who prepares the budgets and uses control techniques. leader personally who wishes to coordinate and monitor activities.

4.2. The tools listed

According to Bollinger Sophie (2020), the management controller must equip himself with different tools to facilitate the collection and processing of data from different sources, but the management controller requires a clear view of the data relating to the different departments. , trades and activities of the organization in order to analyze the data and transmit recommendations to the leaders in order to improve the performance of the organization.

Referring to the work of Moisdon (1997), it is important to make several distinctions. A management tool is not a rule insofar as a rule can be informal: it can be justified by experience or know-how, for example, and remain tacit while a management tool will be formalized. A management tool is a “formalization of organized activity”. Rowe, Fernandez and Picory (1994), through a study carried out in 102 SMEs of which 64.3% have a workforce of less than 50 employees, set out to show that the management of SMEs was not due solely to intuitive decisions. In this perspective, they identified a battery of management tools widely used in SMEs.

The first object of their research, they say, is to show that many management tools exist in SMEs. These tools are part of the instrumental dimension of management control. Thus the forecasting, monitoring, and analysis tools are the materialization of the finalization, management and evaluation phases.

– *Forecasting tools:*

Forecasting tools are embodied in plans and budgets. The aim was to identify the dissemination of these tools in SMEs. The high rates of positive responses lead the authors to question the degree of confidence to be placed in these results. Indeed, because the development of certain tools (training plan, forecast investment return plan) is complex, the response rates must, according to them, be lower.

However, they find that there is an inverse relationship between the degree of complexity of the tool and its use in the enterprise.

– *Monitoring:*

The monitoring tools are represented in the dashboards. This inventory allows, among other things, to get an idea of the variety of indicators that can be found in an SME manager's dashboard and their respective weight in decision support. This study shows that short-term management is favored both in terms of monitoring profitability, demand and production indicators.

– *Analysis:*

The analysis tools are materialized by cost accounting they are the materialization of the management control amendment. The results show that in SMEs, it is the full cost method that is used as it is increasingly questioned by researchers. Additionally, costing is used to fulfill its traditional roles of pricing and calculating margin.

This list of tools identified by Rowe and al. (1994) was supplemented by another study by these same authors (Fernandez and al., 1996). The tools identified from this study:

- for forecasting tools: sales forecast plans, production forecast plan;
- for monitoring tools: turnover, number of orders, supplier deadlines, stocks of raw materials;
- for analysis: unit manufacturing costs and variances on forecast quantities.

In this article, it is about, among other things, to see the characteristics of these tools according to the sectors.

In addition, the Bajan-Banaszak (1993) study focusing on small businesses shows that 48% of businesses use management-oriented financial accounting and only 27% of businesses have management tools other than accounting. The utilization rates are as follows: cost accounting 18%, dashboards 19%, overall forecasts 19%, variance analysis 12% and the budget by function 7%.

Nobre (2001), based on a study carried out among 86 companies larger than 50 employees, specifies that management tools such as dashboards, setting collective objectives, setting individual objectives, determination of monthly results, the budgetary procedure and the calculation of variances are widely used in SMEs.

This set of identified tools forms a list that seems fairly comprehensive to us. A study carried out under the direction of M. Gervais in SMEs in the Grand-Ouest region concerning dashboards, presents the same indicators already cited by Rowe and al. (1994). In addition, a more global study carried out in 1987 by Magazine Tertiel, shows that the managers of SMEs mainly use analytical accounting tools, one-year forecast budgets and dashboards, and these tools are the subject of computerized processing. Similarly, McMahon and Holms (1991) observed that traditional financial tools such as financial gaps, budgets, cost systems, are widely present in SMEs. Finally, Chapellier (1997), in his article, lists most of the tools that we have presented.

This list of tools can, therefore, be considered as a reliable representation of management tools in SMEs. It seems fairly comprehensive to us, but it is far from being exhaustive and has no such vocation. On the one hand, because most SMEs do not have an extensive list of tools and, on the other hand, the needs of these tools are not always necessary or identical.

4.3. Cost accounting and costing techniques

Companies today have to face an increasingly hostile, complex, uncertain and constantly changing environment: there are more competitors, more demanding customers. Faced with globalization and tougher competition, companies must develop their management control tools. More particularly, they must develop their cost accounting to establish a measurement system and constitute a decision-making tool.

Cost calculation plays a fundamental role in any management control system. It ensures the consistency of the action in relation to the overall objectives, and the allocation of resources within the company to achieve its objectives using simple, common and clear language. The cost calculation makes it possible to quantify the objectives, to value the means implemented, and to show the results obtained or planned by product. Finally, it is a tool for decision making that the manager should not underestimate. Not being generally mandatory (the Commercial Code makes no reference to cost accounting), the reason for cost accounting is its usefulness.

In the context of SMEs, while general accounting exists because it is compulsory, cost accounting appears infrequently. However, knowing the costs is essential for the competitiveness of SMEs in the current environment and the control of decisions and actions helps to better guide decisions.

Chapellier's study (1997) is one of the few studies that attempted to characterize the accounting practices of SMEs as a whole, defined in terms of production and use of data by the manager, in relation to the following four fields of accounting: general, management control, financial analysis and dashboard. Other studies, notably those by Lavigne (1999), have focused on the specific field of general accounting. These various studies, while following the current of contingency theory, have demonstrated the heterogeneity of the SME accounting system and have identified some of its determinants.

The study by Lavigne (2002) starts from the consultation of data from 282 manufacturing SMEs. This research leads to the conclusion that, although mainly computerized, the accounting information systems of SMEs are diverse and determined mainly by structural contingency factors, including the size which plays an essential role, and the mode of growth of the company. A specific hypothesis related to the use of management accounting information made more complex SMEs with more influential accounting players adopt more management accounting practices to promote the financial and organizational performance of companies.

Calculating costs is one of the basic tasks of cost accounting. From the study by Nobre (2001) it can be concluded that the majority of SMEs use a single cost calculation method: the full cost method, which they find more than satisfactory.

It is strongly focused on calculating the cost of production. As for pricing practices, three methods are used by SMEs. The first, which is the most common, is to add a margin to the cost price, regardless of the type of cost price used. The second leads to matching the prices charged on the market. The third method consists in valuing a benchmark expense element deemed to be preponderant in the cost price, and in applying a structural rate making it possible to integrate other expenses and the profit margin.

An analytical accounting system must be appropriate to the specificities of the SME. Although the majority of SMEs start their activity without having a cost accounting system, its usefulness becomes apparent to the owner-manager as the activity grows. Not all companies that operate in the same industry have the same expectations when it comes to

cost accounting. Depending on the size, medium-sized businesses need a more complex system that allows them to make decisions about the cost and prices of their products. Regardless of the size of the company, a cost accounting system that is simple, efficient, flexible and suitable for the activity is fundamental for planning, control and decision making in the company. Table 1 summarizes the main observations made from a review of the literature.

Table 1. Management control practices in SMEs

Theme	Results	Authors
Control missions Management.	The missions are mainly the calculation of costs and the determination of prices.	Chapellier et Mohammed, 2010; Nobre, 2001b; Van Caillie, 2003.
Formal nature or informal control.	Informal control is dominant. Goals are set orally.	Collier, 2005 ; Greenhalgh, 2000; Hodges et Kent, 2006; Perren et Grant, 2000; Santin et Van Caillie, 2008.
The implementation formal systems management control.	They are done most often following seizures.	Meyssonnier et Zawadzki, 2008; Reid et Smith, 2000; Santin et Van Caillie, 2008; Zawadzki, 2009.
Control actors Management.	Decision making is between in the hands of the executive or a CFO. Upstream operational tasks are carried out by accounting employees. Accountants play a weak role in management control.	Chapellier et Mohammed, 2010; Nobre, 2001a; Van Caillie, 2003.
Dashboards.	Low interest in strategic steering. Dashboards are often limited to aspects financial. Essentially, it's about controlling the financial health of the business.	Abi-Azar, 2006; Berthelot et Morrill, 2006; Germain, 2005, 2006; Hodges et Kent, 2006; Jänkälä, 2007; Santin et Van Caillie, 2008; Vallerand, Morrill et Berthelot, 2008.
The frequency of checks.	Results are tracked and updated monthly.	Germain, 2006; Hodges et Kent, 2006; Nobre, 2001b; Van Caillie, 2003.
Cost calculation	The full cost method is the most widely used.	Chapellier et Mohammed, 2010; Nobre, 2001b.
Budgets	They are used by 60% to 85% of SMEs. The most common are cash budgets. The time horizon is the year.	Abi-Azar, 2006; Berthelot et Morrill, 2006; Lavigne, 2002; Nobre, 2001b; Van Caillie, 2003.

Source: (Condor, 2012).

Management control in SMEs is not intended to manage staff according to the company's strategy. Rather, it is about setting prices and monitoring the financial health of the business.

However, researchers recognize that there are many contingency factors. This would explain, for example, that some SMEs carry out global strategic management or that they have more complex than normal management control systems.

4.4. Management control practices in Morocco

The study by Ejbari (2018) on a sample of 51 Moroccan SMEs shows that the data systems for management control of SMEs in Morocco are generally underdeveloped and formalized. The cost calculation systems are formalized in just over half of the SMEs in the survey. They focus on establishing full costs of products and/or services offered by businesses. The other leaders use intuitive costing techniques according to procedures specific to them. Budgets and forecasts are underdeveloped practices insofar as less than 25% of managers have them. The budgets drawn up cover short periods and relate to the main functions with specific attention paid to the treasury. The practices of dashboards are similar to those of budgets: only 27.5% of managers have them with a monthly update frequency in most cases. The information contained in these dashboards is of internal origin and relates to orders processed or in progress, the turnover achieved and the main expense items. Few leaders incorporate extroverted data into it.

The production of non-compulsory management control data is the work of managers, assisted mainly by internal accountants and incidentally by external accountants. The use of computer tools for the production of this data is either systematic or ad hoc in 58.9% of companies which mainly use spreadsheets and incidentally specific accounting software. In addition, the frequencies of use of management control data are closely related to their nature. Indeed, the monitoring of costs and profitability are the most frequent and the most regular and are done on a weekly or monthly basis while budgets are used monthly.

Also the study by Daanoune and Maimouni (2018) shows that the SMEs surveyed in the northern region of Morocco have not yet established the management control function (except for a few). The results show that there is a predominance of the manager in the management of the SME; they carry out several types of responsibilities (including the management control function). Indeed, the delegation of powers in these SMEs surveyed is almost absent. We can therefore say that the director-manager is among the "obstacles to the introduction of management control in SMEs.

The majority of SMEs surveyed do not formalize the strategy. The cost calculation is done in a simple way just to make a decision or prepare an offer on a specific project or product. Budgets are drawn up annually and may be revised during the year. The dashboards are based on purely financial indicators or activity monitoring according to the sector and are not used as performance management tools for the analysis of gaps and the search for the causes of dysfunctions in order to take corrective actions.

5. CONCLUSION

The improvement in the growth of Morocco's economy has been based, in recent years, mainly on the stimulation of investment by companies, especially SMEs. The efforts made in this context are aimed at upgrading and developing SMEs in order to accommodate them to international requirements. In Morocco, SMEs represent more than 95% of companies, employ 50% of employees, carry out 31% of exports, 51% of national investments and 40% of production1. Its participation in GDP is limited to around 20% compared to 60% in some countries. The difficulties of SME access to sources of finance are among the obstacles to

SME development. In this context, this study, covering the period 1996–2002, attempts to establish a diagnosis of SME financing in Morocco by evaluating the performance of the financing systems put in place to serve this type of company and by identifying obstacles to its development. To do so, the study first recalls the efforts made by the public authorities to adapt the financial environment of companies to new global requirements. It then analyzes the importance of the banking system's participation in the financing of SMEs and assesses the efficiency of certain financial mechanisms put in place to support the equity capital of SMEs.

As SMEs develop, management control becomes, for them, a key factor of success. Moreover, we should not consider that the management control function in an SME does not exist. In this particular context, it is often associated with other functions. In addition, there are SMEs that carry out management control without knowing management is not always due to intuitive decisions. In this perspective, we have identified a battery of management tools adapted to SMEs which allow the mastery of internal management (management accounting, budgets and dashboards etc.).

Currently, the leaders of Moroccan companies are aware of the need to take into account in their strategic policies new concepts which make it possible to meet the expectations of the various stakeholders in order to ensure a sustainable and perennial development of their structures. Based on the assumption that the sustainable development and sustainability of companies are closely linked to the practice of management control in the environment of small and medium-sized Moroccan companies.

Furthermore, it should be noted that the commitment of SMEs to sustainable development consists of combining economic performance and social performance. Thus, management control as it has been conceived for twenty years is most often centered on the control of economic performance. Therefore, companies including SMEs must measure their overall performance by including, in addition to the economic dimension, the social and environmental dimensions.

Finally, we point out that the present work is an outline of research in management control in SMEs. In the future, we intend to do empirical research to study the practices of SMEs in Morocco in terms of management control.

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AN ANALYSIS AND IMPROVEMENT OF THE PRODUCTION PROCESS OF EXTERNAL DOORS

The study aimed to conduct a cost-value analysis of the production process of a newly introduced batch of external doors in the context of value-added creation and to identify redundant processes that do not create added value and for which appropriate corrective actions could contribute to their elimination. The result of applying improvement actions following the lean management concept was the optimization time nationalized analyzed by eliminating, among others, operations related to unnecessary transport and storage of products. In addition, the optimization production process impacted both shortening the process implementation time and reducing the costs of its implementation. Further activities will be related to the use of the presented methodology to analyze the processes implemented in the company in order to increase their efficiency.

Keywords: quality, cost, production engineering, improvement.

1. INTRODUCTION

The need for improvement in companies has been around for a long time, but in today's rapidly changing marketplace, it has become essential (Liker and Franz, 2013; Womack and Jones, 2012; Ostasz et. al., 2020; Mentel and Hajduk-Stelmachowicz, 2020; Wolniak and Skotnicka, 2008). The requirement to be a flexible, efficient, growth-oriented enterprise and adapt quickly to a changing environment indicates the primary rationale for pursuing excellence and remaining competitive. Improvement can cover various aspects of the company, for example, processes, activities, products and services (Wolniak, 2013; Alinejad and Anvari, 2019; Lim et. al., 2019; Pacana et al., 2019).

Currently, many enterprises use the process approach in management because the identification of processes occurring in the organization deepens and interprets the creation of added value, while their improvement increases the efficiency of implementation and the level of the buyers' satisfaction (Lichtarski, 2015; Van Looy, 2021; Zuhaira and Ahmad 2021). Companies implement various methods and management concepts that use a process approach, for example, TQM (Total Quality Management) (Permana et. al., 2021; Lasrado

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and Nyadzayo, 2020; Tasleem et. al., 2016); Lean Management (Moyano-Fuentes et. al., 2021; Maldonado et. al., 2020), Six Sigma (Simanova and Gejdos, 2021; Raval et. al., 2020). Quality Management System (QMS) according to ISO standards (Sfreddo et. al., 2021; Pacana and Ulewicz, 2020). Moreover, companies seek additional benefits through their integration (Montgomery, 2013; Soare, 2012; Salah et. al., 2010; Sa et al., 2020; Youssef and Youssef, 2018). Their practices indicate the need to implement a multi-step process of process improvement and mechanisms to support their improvement and management. Essential support in the context of process improvement is the provision of adequate human resources who will be able to effectively manage and improve the processes (Bessant et. al., 2001; Yen-Tsang et. al., 2015).

The study aimed to carry out a cost-value analysis of the production process of a newly introduced batch of external doors in the context of value-added creation and to identify redundant processes that do not create added value and for which appropriate corrective actions could contribute to their elimination.

2. SCOPE AND SUBJECT MATTER

Due to a decrease in efficiency, the desire to reduce costs of the production process and the desire to implement improvements, the research subject was the production process of a newly implemented product – external doors. The survey was conducted in Q4 2019. in one of the manufacturing companies (Erkado) located in the southern part of Poland.

3. RESEARCH METHODOLOGY

In the study, it was decided to identify the structures of individual categories of the production process of external doors, which is a determinant of the effects of its Implementation, which (in addition to its primary purpose) include the creation of added value for customers. The methodology of process analysis in terms of value-added generation used in this study is presented in Figure 1.

The implementation of process evaluation in the context of value-added starts with answering two fundamental questions, “Can the process be eliminated without compromising the benefits achieved by the customer?” and “Can the process be eliminated without compromising the cooperating processes?”. If both questions are answered in the negative, it means that we are dealing with a process directly related to the creation of added value. However, if the answer is yes, it is likely that the process does not create added value. However, not all processes that do not directly add value are processes that need to be removed.

On the other hand, negative answers prove that the analysis is not related to the creation of added value – these are unnecessary processes. This type of activity adversely affects the process as it generates additional costs and increases the process time.

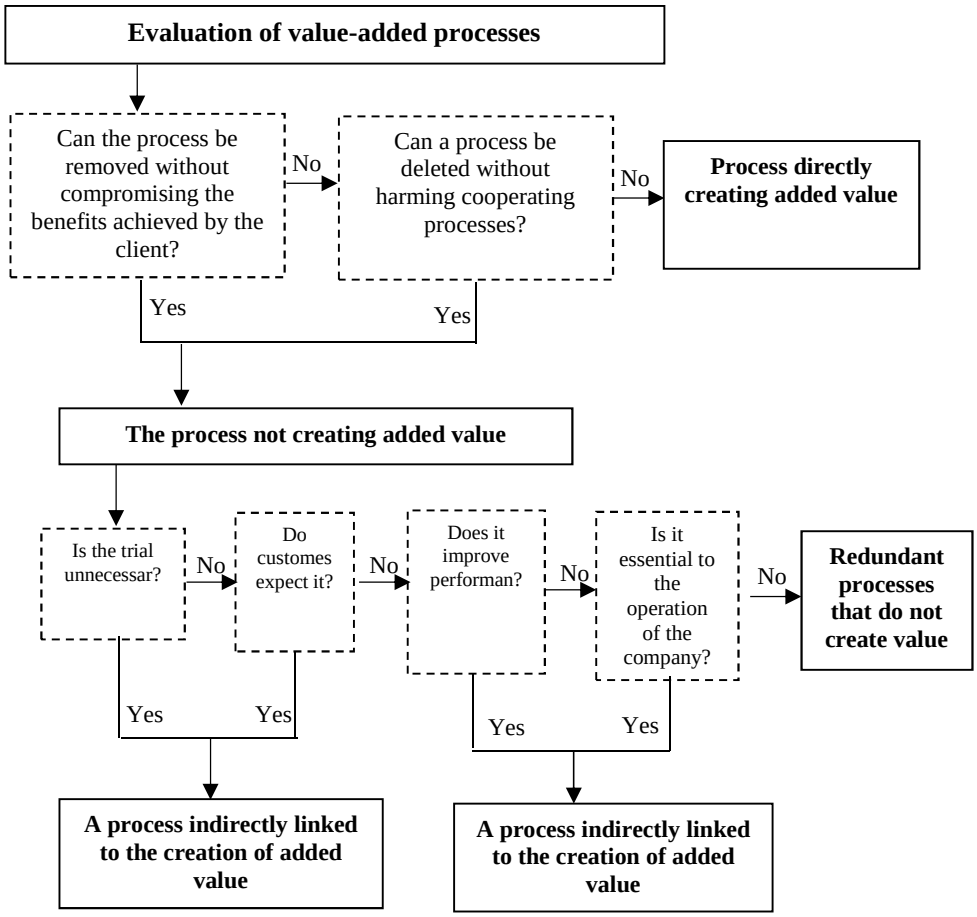

Figure 1. Algorithm for evaluating processes in the context of creating added value

Source: Own study based on: (Kulińska, pdf).

4. RESULTS AND DISCUSSION

The analyzed process of external doors along with the division of operations into operations creating added value (1), operations not creating added value but necessary to produce the product (2) and redundant operations – not creating added value (3) are presented in Table 1. The second group of the breakdown of operations includes operations indirectly creating value-added and those relatively related to value creation.

The production process of the studied product was analyzed for the duration of individual operations and the creation of added value. The analysis showed that the manufacturing process consists of 32 operations with 7 hours, 31 minutes and 5 seconds. Among all operations, only 22 create added value and their execution time is 1 hour and 38 minutes. Six operations do not add value to the manufactured product. The most extended

operations in this group include storage of the finished product and marking. The duration of the most extended operation is related to the time after which the stored items will be transferred to an external customer.

Table 1. Exterior door process chart

ERKADO		PRODUCTION PROCESS FLOW SHEET						
PRODUCT NAME:		**EXTERNAL DOORS**						
Lp.	**Name of the manufacturing process operation**	**Device/stand**	**Technological approach**				**Breakdown of operations**	**Duration**
			○	⇨	□	▽		
1.	Collection of raw materials and semi-finished products from storage	-	X				(2)	10 min
2.	Transport to the production department	-		X			(2)	13 min
3.	Cutting of wooden frames	Rover C6	X				(1)	5 min
4.	Production of frame elements, strips, bands, quarter rounds	Sitemap	X				(1)	20 min
5.	Routing holes for fittings and seals	Manual station	X				(1)	4 min
6.	ferrule	Manual station	X				(1)	3 min
7.	Packaging	Manual station	X				(3)	6 min
8.	Marking I	Manual station	X				(2)	20 s
9.	Routing of base frames	Rover C6 / Felder	X				(1)	4 min
10.	Milling of crossbars	Rover C6	X				(1)	2 min
11.	Drilling	Askla drilling machine	X				(1)	1 min
12.	Tenoning	Tenoning machine	X				(1)	1 min
13.	Pin installation	Assembly station	X				(1)	1 min
14.	Interoperation inspection	Inspection stand			X		(1)	3 min
15.	Processing of vertical frames	Rover 2	X				(1)	3 min
16.	Shortening	Askel saw	X				(1)	1 min
17.	Routing of the upper rebate	Rover C6 / Felder	X				(1)	1 min

Table 1 (cont.). Exterior door process chart

ERKADO		PRODUCTION PROCESS FLOW SHEET						
PRODUCT NAME:		**EXTERNAL DOORS**						
Lp.	**Name of the manufacturing process operation**	**Device/stand**	**Technological approach**				**Breakdown of operations**	**Duration**
			○	⇨	□	▽		
18.	Drilling holes for dowels, hinges and lock	Askla drilling machine	X				(1)	4 min
19.	Marking II	Tunnel	X				(3)	20 s
20.	Receiving inspection	Inspection stand			X		(1)	5 min
21.	Arrangement on transport racks	Tunnel	X				(2)	3 min
22.	Selection of elements (crossbars, vertical frames, glass)	Position. assembly	X				(2)	4 min
23.	Installation of waterproof plywood	Edge banding machine	X				(1)	6 min
24.	Filing	Position. assembly	X				(1)	3 min
25.	Polyurethane foam padding	Manual station	X				(1)	12 min
26.	Ironing	Diaphragm press	X				(1)	10 min
27.	Fitting of fittings	Position. assembly	X				(1)	2 min
28.	Quality Control	Inspection stand			X		(1)	4 min
29.	Packaging	Tunnel	X				(1)	5 min
30.	Marking III	Tunnel	X				(3)	25 s
31.	Transport to finished goods warehouse	-		X			(3)	15 min
32.	Storage	Magazine				X	(3)	Five h.

Source: Own study.

In order to assess the added value in the examined process, the costs of particular operations were estimated. Then the dependence between the cost of operation (WK) and the adopted indicator Wkw were identified. The indicator used determines the relation between the costs and the product's value. (The value of the product means the price the buyer pays for a particular product.) The result of the analysis is shown in Figure 2. The chart shows the value chain of the production process, including the WKw and WK indicators expressed in percentage.

In Figure 2, Group 1 refers to activities that are part of the process and add value. Group 2 refers to operations that do not add value but are necessary to be performed. Group 3 refers to operations that are redundant and do not add value.

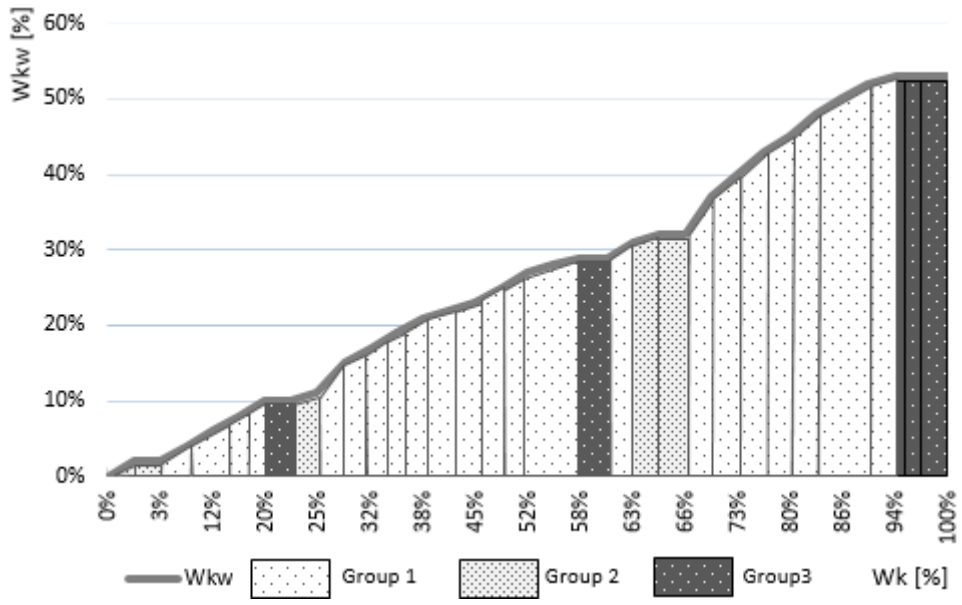

Figure 2. Diagram of the creation of added value of the analyzed process

Source: Own study.

As part of further analysis of the process, a summary of the lead times for non-value-added operations was compiled (Table 2).

Table 2. Summary of the duration of non-value-added operations

Technological operation	**Time for one [h]**	**Time for a batch of 70 [h]**
Packaging	0.1	7
Signage	0.0125	0.875
Transport	0.25	17.5
Storage	5	350
Total	**5.3625**	**375.375**

Source: Own study.

The data in Table 2 show a large share of warehousing time compared to other non-value-added operations. Therefore, as part of the activities to minimize inefficiencies in warehousing, management under the just-in-time method were implemented. This method involves the complete elimination of waste by supplying each production process with all the required items at the required time and in the required quantity.

Based on the analysis (Table 2), it can be seen that a significant amount of time is also consumed by transport (of materials to the production hall and transport to the warehouse). Therefore, the remedial actions used a methodology consistent with the concept of Lean Manufacturing. Furthermore, when designing the new production line, the issue of the speed of the flow of the machined elements of the product was taken into consideration by

appointing a streamline, which, according to its essence, eliminates excessive transport between the production halls. In addition, actions have been taken to restructure the organizations themselves, allowing them to reduce transport time between workstations and eliminate "packing operations".

Although it does not generate high costs, after more analysis, the issue of product marking was decided that the operation Marking II and Marking III are unnecessary. Instead of creating new labels, it was decided to adopt the labels from operation "Labelling I" to include additional information.

The implementation of improvement actions contributed to the elimination of redundant operations in the analysis. Additionally, thanks to the reorganization of the production line and workstations, the execution time of operations that do not create added value but are necessary for the realization process was reduced (Table 3).

Table 3. Summary of the duration of non-value added operations after implementation of improvement actions

Technological operation	Time for one [h]	Time for a batch of 70 [h]
Packaging	0	0
Signage	0,005	0.35
Transport	0.083	5.81
Storage	0	0
Total	**0.088**	**6.16**

Source: Own study.

The presented times of non-value-creating operations in Table 2 and Table 3 indicate the success of the implemented improvement actions. Because of their implementation, the operation time per batch of 70 products decreased by 98.35%, which is also associated with a decrease in the finished product cost.

5. SUMMARY AND CONCLUSION

The foundation of production process improvement is the effective connection and use of production elements resulting from the need to meet customer requirements, increase competitiveness, increase the essence of flexibility, both internal and external. The quality of the processes also depends mainly on the modernity of the product and the organizational organization applied in the company.

Among the many possibilities of improving the organization, activities related to increasing the effectiveness of implemented processes play an important role. therefore, it seems reasonable to undertake cost-value analysis of the main processes in manufacturing companies. The aim of the research was to perform a cost-value analysis of the production process in relation to the newly introduced batch of external doors within the framework of creating added value and to identify unnecessary processes that do not create added value and in relation to which appropriate corrective actions could contribute to their elimination. The study optimised the production process of external doors in terms of creating added value. Because of the implementation of improvement actions in accordance with the Lean Management concept, the time of some operations, which do not create added value but are necessary to carry out the process, was reduced and unnecessary operations, which did not

create added value, were eliminated. Moreover, the implemented improvements reduced the costs of process execution, increasing the efficiency of the process and the timeliness of task completion.

The proposed cost-value analysis is a useful and effective way of analyzing processes, which can be practised in various enterprises.

Further research directions will concern the analysis of other production processes in the investigated enterprise.

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THE STRATEGY FOR IMPROVING THE CUSTOMERS LOYALTY OF KAI AGRO PARAHYANGAN[3]

Purpose: This study aims to find out about the influence of price fairness and service quality toward customers' satisfaction and loyalty, along with its indirect relationship on customers' loyalty. This study focuses on the customers of Indonesian Railways Company/KAI especially the passenger of Argo Parahyangan with Jakarta – Bandung route through *Gambir* Station. Methodology: This study used a descriptive qualitative methodology, applying Square Equation Model (SEM) in analyzing the data. The sample is taken from 254 customers who use *KAI Agro Parahyangan*. Result: The results showed that full mediation on price fairness variable has no significant influence toward the customers' satisfaction. Meanwhile, for the variable of service quality has significant and positive influence on customers' satisfaction. But, both price fairness and service quality are having significant relationship toward customer's loyalty. Conclusion: Therefore, in conclusion, customer's loyalty is influenced by the customer's satisfaction.

Keyword: price fairness, service quality, satisfaction, loyalty.

1. INTRODUCTION

Residents' mobility has strong relationship with the society's socio-economic level within a region. This leads to discussion related to residents' mobility and transportation used. In its development, nowadays, residents' mobility refers to the utilization of mass transportation. Mass transportation is becoming an option by society as a means of transportation since it is able to give efficiency in time and price. There are many choices of mass transportation in Jakarta that can be used to move from Jakarta to other countries, such as train, plane, bus and travelling service.

Jakarta – Bandung (Jakarta to Bandung) is one of the favorite travel routes, which can be reached through air and land transportation, such as using plane from Halim Perdana Kusuma airport to Husein Sastranegara airport, using private transportation, bus or travelling service through Jakarta to Cikampek highways, and using train.

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KAI Agro Parahyangan is an executive and a premium economy train that serve trip from Jakarta to Bandung and vice versa. Continuous improvement for service quality becomes something that must be done in order to survive and win the competition among transportations sector. Besides, price determinations also become a sensitive issue. Customers can move to other transportation if they are not satisfied with the price and service (Peng, Wang, 2006). The average volume of *KAI Agro Parahyangan's* passengers in January and February 2020 started to decrease since the reopening of Jakarta – Cikampek highways (Firmansyah, 2019).

Marketing strategy based on customers' loyalty becomes a step for company to enhance the financial performance and maintain its position on the market. Another thing that also become consideration related to competition is the higher cost of acquiring new customer. Alfian (2012) stated that customers nowadays is very critical in choosing product, they will spend more time in choosing the product to be almost certain to get satisfied. Customers' decision in buying a product or using a service makes the producer become selective to apply the marketing strategy in order to keep getting attention and loyalty from the customers.

Loyalty has strong relationship with customers' satisfaction toward the service given by a company. Customers' satisfaction will become the basic development of various customers' behavior model after they purchasing a product or a service. Customers will evaluate the product or service, whether it meets their expectation or not. According to Dwiana, Wardi (2013), the level of satisfaction is a function of the difference between perceived performance and expectation. The quality of service can affect the customers' loyalty, both directly and indirectly, through satisfaction (Caruana, 2002). The measurement of service quality in this study followed the measurement by Parasuraman, Zeithaml, Berry (1988) that use five dimension including tangibility, responsiveness, guarantee, reliability and empathy.

Price greatly determines the customer's satisfaction in using service because the amount of charge set by *KAI Agro Parahyangan* is related to the level of passenger's income. If the price is higher, then customer will think twice in using public transportation. Otherwise, if the price is lower, then customer tends to take advantage of public transportation without any long consideration. The policy on determining price has strong connection with the decision of service offered. The analysis of price tend to direct on how far price can be valued as fair and based on the advantage.

Studies on loyalty, satisfaction, price fairness and service qualities are not a new in research, however the result will be different if applied on case of train transportation. The originality is related to the assessment of customers' satisfaction who used *KAI Agro Parahyangan*. Based on the background above, the passenger of *KAI Argo Parahyangan* is becoming the object of this study in order to know the company's strategic steps in keeping the customers' loyalty by defending and enhancing the customers' satisfaction. Therefore, this study aimed to know the effect of price fairness and service quality in obtaining customers' satisfaction, thus customers can be loyal to *KAI* public transportation.

2. METHODOLOGY

This study used descriptive qualitative methodology with *KAI Agro Parahyangan* customers as the research population. The sample is taken using convenience sampling from customers with destination from Jakarta (Gambir Station) to Bandung (Bandung Station)

and vice versa. There are 254 respondents given online survey about the price fairness and service quality of *KAI Agro Parahyangan*. The online survey data are analyzed using Structural Equation Model or SEM using AMOS 22.0 application to examine the conceptual model and the hypothesis.

Price Fairness

Price Fairness is an assessment for an acceptable results and processes by consumers. Price fairness can be inferred from certain types of outcomes and be a consequence of perceived price fairness (Garbarino, Maxwell, 2010). Price fairness was decided based on several levels of price differences such as previous prices, competitor prices, and profits (Curatman, Rahmadi, Ikhsani, 2016). Price fairness is an important variable to affect consumer behavior and responses. The determination of price fairness is affected by various aspects both from the company itself and the company's market share. It will emphasize the price which considered reasonable or the price is low with other benefits (Kotler, Keller, 2016).

Service Quality

Service quality is the fulfillment of customer needs and desires and the accuracy of its delivery to meet customer expectations. Service quality is an attitude and behavior of people in providing services according to the requirements, desires and expectations of the served customers. Besides, affect the customer satisfaction, service quality have an effect on customer loyalty (Pereira, Giantari, Sukaatmadja, 2016). Service quality is a measure of the difference between consumer expectations and service given by the company. Service quality is influenced by the service that is felt and the service that is expected (Stefano, Casarotto Filho, Barichello, Sohn, 2015).

Customer's Loyalty

Customer loyalty is a measure of customer's likeliness to repeat their purchase of the service or goods of business. Customer loyalty is important to determine customer satisfaction. If the customer shows his loyalty toward a business, it means that customer satisfied of the obtained product (Abu-Alhaija, Nerina, Hashim, Jaharuddin, 2018). Customer's loyalty is regarded as a long-term asset (Kandampully, Zhang, Jaakkola, 2018). The instruments used to measure customer loyalty are repurchase, referrals, and the first choice for shopping (retention) (Ariesty, 2017).

Customer's Satisfaction

Customer satisfaction is a key to company success. Satisfaction is the level of a person's feelings after comparing the perceived performance or results within his expectations. It has a strong influence on customer purchases of the product. It is necessary to examine customer satisfaction in order to maintain the company long-term competitiveness. Customer satisfaction is also based on customer knowledge, specifically the knowledge from the customer (Aghamirian, Dorri, Aghamirian, 2015).

Research Hypothesis

H1: Price fairness has positive relationship with customers' satisfaction;
H2: Service quality has positive relationship with customers' satisfaction;
H3: Price fairness has positive relationship with customers' loyalty;
H4: Service quality has positive relationship with customers' loyalty;

H5: Customers' satisfaction has positive relationship with customers' loyalty;
H6: Price fairness has positive influence on loyalty through customers' satisfaction;
H7: Service quality has positive influence on loyalty through customers' satisfaction.

3. RESULTS

Table 1. The influence of price fairness towards loyalty with customer's satisfaction as mediation variable

Research Title	Variable X1 has influence toward variable Y	Variable X1 has no influence toward variable Y
Modelling the relationship between hotel perceived value, customer satisfaction, and customer loyalty (El-Adly, 2019).	The results showed that price, transaction, hedonic, and quality influence the customer's satisfaction. The customer's satisfaction is affected by the customer's loyalty.	
The impact of value co-creation on satisfaction and loyalty: the moderating effect of price fairness (empirical study of automobile customers in Ghana) (Opata, Xiao, Nusenu, Tetteh, Asante Boadi, 2019).	The findings showed that price fairness not only influences satisfaction and loyalty but also has a significant and positive moderation. Price becomes a key in influencing customers' satisfaction and loyalty.	
Role of airline food quality, price reasonableness, image, satisfaction, and attachment in building re-flying intention (Han, Lee, Chua, Lee, Kim, 2019).	The research results verify the effectiveness of the higher-level structure of food and beverage quality on board, which significantly improves the reasonableness of the passenger's perception of price, airline image and satisfaction during the decision-making process of re-flight.	
The Effect of Price and Product Quality Towards Customer Satisfaction and Customer Loyalty on Madura Batik (Wantara, Tambrin, 2019)	The findings indicated that price has significant influence to customers' satisfaction and loyalty. The customers are satisfied with Madura batik since it has good product quality and price. The loyalty is showed from the action of re-buying the Madura batik which done by some customers.	
The Impact of Price Fairness and Service Quality on Customer Satisfaction and Loyalty of Lion Air Airlines Due to Paid Baggage Policy on Domestic Flights at Soekarno Hatta Airport (Fadhilla, Zimbalis, Setyawati, Anthony, 2019).		The results of this research indicated that the Price Fairness Variable does not affect Customer Loyalty of Lion Air Airlines.

Source: Own study.

Table 2. The influence of service quality towards loyalty with customer's satisfaction as mediation variable

Research Title	Variable X1 has influence toward variable Y	Variable X1 has no influence toward variable Y
The impact of service quality, customer engagement and selected marketing constructs on airline passenger loyalty (Hapsari, Clemes, Dean, 2017).	The result found that service quality had positive relationship with customer's satisfactory. Service quality can also enhance customers' perceptions of brand image and boost their loyalty.	
Mediators of the relationship between service quality and customer loyalty (Makanyeza, Chikazhe, 2017).	The study found that service quality, satisfaction and corporate image all have a positive and direct impact on loyalty. It is also found that both satisfaction and corporate image can adjust the impact of service quality on loyalty.	
The impact of Umrah service quality on customer satisfaction towards Umrah travel agents in Malaysia (Othman, Harun, Rashid, Ali, 2019).	There were positive and significant relationship between the retail service quality dimensions and customer satisfaction.	
An examination of the effects of service quality and customer satisfaction on customer loyalty in the hotel industry (Priyo, Mohamad, Adetunji, 2019).	This study indicates that, customer loyalty cannot be maintained through the satisfaction of customers alone. Hence, maintaining the quality of services and ensuring reliable, tangible, responsive and dependable services at all time can increase customers' attitudinal loyalty.	
The Impact of Price Fairness and Service Quality on Customer Satisfaction and Loyalty of Lion Air Airlines Due to Paid Baggage Policy on Domestic Flights at Soekarno Hatta Airport (Fadhilla, Zimbalis, Setyawati, Anthony, 2019).	The results of this research indicated that service quality affect customer loyalty of Lion Air Airlines.	

Source: Own study.

4. DISCUSSION

This study combines some previous studies' findings with variable of price fairness (X1) and service quality (X2) to analyze its influence towards variable of customer's loyalty (Y) with price satisfaction variable as mediation. The result and discussion is explained as below.

The influence of price fairness towards loyalty with customer's satisfaction as mediation variable

A study from El-Adly (2019) who analyzed on the behavior of hotel customers in United Arab Emirates found that price had positive relationship with customer's satisfaction. Based on the result of this study, it contributes to the literature of marketing service in general. This research enhances people understanding regarding customer perceived value in the context of hotel services. It offers a better understanding regarding the relationships between customer perceived value dimensions, satisfaction, and loyalty in the hotel context. This research model finding indicates that: (a) four out of seven perceived value dimensions (price, transaction, hedonic, quality) positively affected customer satisfaction, while the aesthetic, prestige, and hedonic dimensions were found to have an insignificant direct effect on customer loyalty; (b) that customer satisfaction directly affects customer loyalty; (c) that four hotel perceived value dimensions (hedonic, price, quality, transaction) also significantly affected loyalty through customer satisfaction, because of mediating role of customer satisfaction in perceived value-loyalty relationship.

This study considered seven dimensions of hotel perceived value, five of them were found to have significant effects on customer satisfaction and/or customer loyalty. Two value dimensions were found to have insignificant effects on both customer satisfaction and customer loyalty. Thus, other value dimensions could be added to the hotel perceived value, such as social interaction, health and wellness. Similar result also found in Opata, Xiao, Nusenu, Tetteh, Asante Boadi (2019) and Han, Lee, Chua, Lee, Kim (2019) study that customer's satisfaction is affected by the price fairness. Moreover, Wantara and Tambrin (2019) done research to batik customer and indicated that price fairness and satisfaction influence the customer's loyalty.

The results of this study indicates that price has significant effect on customer satisfaction and loyalty. This result illustrates that the price of Madura batik has met the consumers' expectation. It can be used as a strategy to increase the customer loyalty of Batik Tanjungbumi, Bangkalan customers. Product quality has significant positive influence on customer satisfaction, but it does not have a significant effect on customer loyalty. Customer satisfaction has a significant and positive impact on customer loyalty. This shows that someone will re-buy if their satisfaction toward the product is fully fulfilled. Last but not least, Fadhilla, Zimbalis, Setyawati, Anthony (2019) claimed that price fairness did not affect the loyalty of the customers. They found that service quality is more affecting the customers' loyalty.

The influence of service quality towards loyalty with customer's satisfaction as mediation variable

According to Karen (1995), in marketing, service quality can affect the customers' satisfaction. It is strengthen with some findings, such as Hapsari, Clemes, Dean (2017) in their study about the plane customer's satisfaction, they found that service quality had positive relationship with customer's satisfactory. Service quality can also enhance customers' perceptions of brand image and boost their loyalty. Once customers experience superior service quality, their perception of that brand increases and they normally consider in re-purchasing the service and recommending it to others. Another literary study regarding service quality influence customer loyalty have been implemented by Makanyeza and Chikazhe (2017) and Othman, Harun, Rashid, Ali (2019) also supported that service quality influence customer's satisfaction. Findings of the study found that service quality,

satisfaction and corporate image all have positive direct effects on loyalty. It was also found that satisfaction and corporate image all mediate the effect of service quality on loyalty. Furthermore, to know the effect of service quality indirectly on customer's satisfaction, Priyo, Mohamad, Adetunji (2019) done a study on hotel customers and showed that the service quality had positive influence with loyalty through customer's satisfaction. The results of this study have provided customer satisfaction and loyalty in the context of hotel services industry. The result presented in this study evinced that, customer satisfaction is proved to have a positive and significant influence on customer loyalty. Fadhilla, Zimbalis, Setyawati, Anthony (2019) also found that service quality affect the customers' satisfaction which may lead to the loyalty. This study, therefore, contributes to fill the knowledge gap on customer satisfaction and loyalty. Also, the study reveals significance of customer satisfaction on customer loyalty to hotel services.

Enhancing KAI Argo Parahyangan Customers' Loyalty

KAI Argo Parahyangan is a new series of train that made for students and/or employees who are moving or travelling from Jakarta to Bandung and vice versa which focused on the comfort and safety of the transport. Unlike the previous *KAI Parahyangan*, *KAI Argo Parahyangan* has a new image with silver color, made of the stainless steel. The facilities also completed with comfortable seats and flexible footrests, two toilets, 4 wide televisions evacuation path marks and earphone facilities (REP-PUN, 2018). It also claimed that the ticket price is affordable and the service quality is good. As Hidayah, Yolinda, Nugraha (2019) stated in their study that there is significant relationship between service quality and passenger interest in using *KAI Argo Parahyangan*. Hidayah et al. also said that comparing to the previous years, the comfort in the wagon is increased.

However, Henggartiasto and Wibowo (2012) in their study, found out that the service quality of *KAI Argo Parahyangan* is not fulfilling the customers' expectation which lead to dissatisfaction. It is seen through the service given by KAI employees when customer purchasing the ticket. The ticker reservation through call center is hard to reach, while the on the spot ticket is having a quite long queues due to the lack of the employees. Hidayah, Yolinda, Nugraha (2019) also indicated that the service at the ticket sales point needed to give attention due to the comfort in queuing system. The waiting room also needed to be noticed because there are some passengers who have to wait outside the station, when the queuing is full. Nevertheless, the ticket price offered is very competitive and still affordable for students and/or employees.

Since the customer's satisfaction is affected by the price fairness and service quality, thus it is needed to build a strategy for enhancing the *KAI Argo Parahyangan*'s loyalty, such as in toilet hygiene, exterior and interior design, and employees' service. Toilet hygiene is needed to be clean regularly because it is one of the important places for passengers. Beside the toilet, the wagon also needed to complete with room fragrance which will help to neutralize the smell. Moreover, the television within the train should showed some shows besides the *KAI* advertisement, thus passengers will feel comfortable during the trip. For the employee's service, *KAI* should do a training to improve the skills, motivation and work performance. Therefore, if an affordable price and a good service quality can satisfy the customers, then the loyalty will be built.

5. CONCLUSIONS

Based on the result above, it can be concluded that:

1) There is positive influence between price fairness on customer's loyalty. The positive relationship from research variables showed that the higher the level of price fairness, the higher customer's satisfaction. Therefore, customer's loyalty can be enhanced by keeping the price fairness and customer's satisfaction.
2) As mediation variable, customer satisfaction has been proved that there is positive influence between service quality towards customer's loyalty which showed that the higher the service quality the higher the customer's satisfaction is. Thus, customer's loyalty can be increased by maintaining the service quality and customer's satisfaction. By increasing customer satisfaction level and service quality, customer will stay loyal to a business company.

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PROJECT RISK MANAGEMENT BASED ON A SET OF BEST PRACTICES

The purpose of this article is to present the process of risk management in project management. The analysis was based on a comparison of two best practices of IPMA and PRINCE. Risk management differs significantly between the two approaches, but it is up to the organization to choose its own management, monitoring and methodology tailored to the specific industry or sector. Risk management is an important aspect of the entire project life cycle and must be monitored throughout the project life cycle to protect not only the budget but all areas of the so-called "golden triangle". A very important aspect is the organization's awareness that risk management is everyone's responsibility, not just the project manager. This paper presents two different approaches to project risk management in two different methodologies.

Keywords: risk, risk management, best practices.

1. INTRODUCTION

Risk taking in projects is inevitable as all projects lead to change, and change is accompanied by uncertainty and therefore risk (Trocki, 2012; Drączkowska, 2020).

Risk management should therefore be systemic, rather than haphazard, as it is in some projects. It is about proactively identifying, assessing and controlling those risks that can affect the achievement of project objectives. A cost-effective risk management procedure should be established and maintained in the project.

The essence of risk arises from the fact that decisions are made about the future , making decisions under such conditions of risk is nothing more than making decisions without complete information. In all types of ventures there is a possibility of events that will entail consequences, which are either opportunities for positive benefits or threats to the success of the venture. It is accepted that risk concerns not only the negative but also the positive aspects of an action (Trocki, 2012; Kerzner, 2001).

Risk management is an ongoing activity that is carried out throughout the life of a project. Without an ongoing, effective risk management procedure, it cannot be ensured that the project will be able to fulfil its objectives and that it is therefore worth continuing. Effective risk management is therefore a requirement of the principle of maintaining continuous business case (Kerzner 2001; Malec, 2009)

Risk management protects and adds value to an organisation because it contributes to the achievement of its objectives by: providing a systemic framework, through which the

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organization will be run in a consistent and controlled manner , streamlines processes in the organization , allows more efficient use of the resources at hand , protects and builds the image of the company and improves the efficiency of operations (Marcinek, 2000; Kisielnicki, 2017).

2. SURVEY METHODOLOGY

The risk management analysis was carried out using two approaches depending on the specifics of the project. We are talking about the PRINCE approach, whose management model is based on products, and whose field of application is very wide. Currently, this approach is used primarily for training projects, in non-profit organizations.

A completely different approach is proposed by IPMA methodology, which is very complex and comprehensive. It is widely used to manage not only projects, but also programs or project portfolios. It provides a clear and transparent framework for monitoring risks across the enterprise and defines accountability within the team. Below are the characteristics of both PRINCE and IPMA risk management.

3. RISK MANAGEMENT ACCORDING TO PRINCE2

A risk is an uncertain event or set of events that, if it occurs, will affect the achievement of objectives. In the context of a project, project objectives are exposed to risk. These include the completion of the project along with the achievement of a number of target values, usually relating to time, cost, quality, scope and benefits (Lock, 2013; Prince2tm, 2009).

Risk management refers to the systematic application of procedures to the task of identifying and assessing risks, and then planning and implementing appropriate response strategies. This as much as possible creates a structured environment for proactive decision making. For risk management to be effective it must be: identified, assessed and managed (Pritchard, 2002).

The approach to risk management is based on the so-called MoR. Risk management is based on a number of risk management principles, which in turn are applicable to the project context:

- Understanding the project context.
- Stakeholder involvement.
- Establishing clear project objectives.
- Developing a project risk management approach.
- Regular reporting of risks.
- Clearly defined roles and responsibilities.
- Establishing a support structure and environment to support risk management.
- Monitoring of early warning indicators.
- Establishing a review cycle and continuous improvement.

The starting point for all projects is to establish the organisation's policies and processes or programmes that must be applied. This can take the form of a risk management policy and guidelines for the management itself.

The PRINCE2 methodology recommends that each project should have its own Risk Management Strategy and control tool, i.e. a Risk Register (Prince2tm, 2009).

After reviewing the organisation and programme level documents, and before taking any action regarding risk management, a Risk Management Strategy should be developed for the project.

A key decision to be recorded in the Risk Management Strategy is the Steering Committee's own approach to risk taking, which in turn will dictate the degree of risk that is considered acceptable. This information is recorded in the form of risk tolerances representing that level of exposure to risk which, if exceeded, will lead to the production of an Emergency Report for communication to the Steering Committee of the situation.

PRINCE2 recommends a risk management procedure with five steps:

1. Identify (context and risks).
2. Assess (estimate and evaluation).
3. Plan.
4. Implement.
5.Communicate.

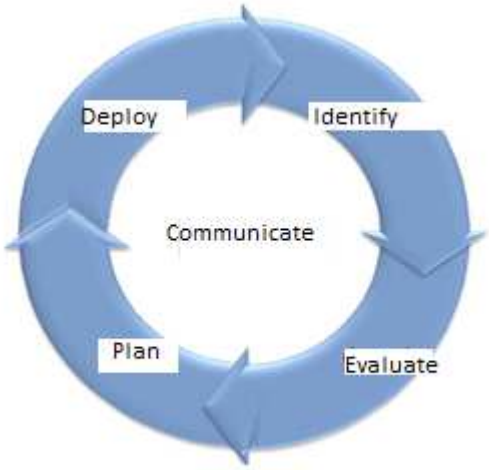

Figure 1. Risk management procedure

Source: (Trocki, 2012).

PRINCE2 recommends that when identifying risks, the identified risks and opportunities should be recorded in a Risk Register, early warning signals should be prepared to monitor critical aspects of the project and provide information on potential sources of risk, and the opinion of stakeholders on specific risks should be sought.

An effective way to identify risks is to use a so-called risk workshop. This is a group session designed to identify risks and opportunities. This session should be conducted by a person who is well versed in creative thinking techniques. The aim of the workshop is to work out the widest possible range of risks and their potential owners (Trocki, 2012).

PRINCE2 recommends that in the case of risk assessment, special attention should be paid to the following issues: assigning categories to probabilities and opportunities, ocean-going each risk and opportunity in terms of the project, materialising the risks and

opportunities, and determining the extent to which the impact of the risks and opportunities will change over the life of the project.

In the case of evaluation it is necessary to make a net assessment of all identified risks and opportunities in the project if they were to be combined. This makes it possible to assess the overall risk weights and whether they are within the tolerance set by the Steering Committee and whether the project still has a business case.

The main purpose of planning is to prepare specific management responses to identified risks and opportunities, ideally with the aim of removing or reducing the risks and thereby maximising the opportunities.

The next stage is implementation. An important element here is to ensure that there is a clear allocation of roles and responsibilities to support the Project Manager in managing project risks. The roles are the risk owner, the person responsible for managing, monitoring and controlling all aspects, and the risk response contractor (Lock, 2013; Prince2tm, 2009).

Risks are communicated through management products

- Checkpoint reports.
- Interim reports

end of Phase Reports.

Reports from checkpoints

- Periodic reports.
- Final Stage Reports.
- Final Project Reports.
- Experience Reports.

Special care should be taken when using these reports for external stakeholders, bearing in mind that the Communication Management Strategy is always the overriding document in this case **(**Prince2tm, 2009).

Summarizing the topic of risk management based on the PRINCE2 methodology, one cannot forget about the roles and responsibilities of individual people involved in the project. Thus, in turn:

- The management of the organisation or programme is responsible for establishing the organisation's risk management policy and provides guidance on the risk management process.
- The Chairperson is responsible for all aspects of risk management and in particular for ensuring that there is a Risk Management Strategy for the project. He/she also ensures that risks directly related to the Business Case are identified, assessed and controlled.
- The Main User shall ensure that risks associated with users are identified, assessed and controlled.
- The Main supplier ensures that risks associated with suppliers are identified, assessed and controlled.
- The Project Manager is responsible for developing the Risk Management Strategy, establishing and maintaining the Risk Register and ensuring traceability of risks throughout the project.
- The Project Supervisor reviews risk management practices to ensure compliance with the Risk Management Strategy.
- Project Support works with the whole team in maintaining the Risk Register for the project.

4. RISK MANAGEMENT ACCORDING TO IPMA

Risk management according to IPMA differs slightly from the PRINCE2 standard not only because of the nomenclature used, but also because of the approach to risk management itself.

In the case of IPMA there is definitely more emphasis on risk analysis in particular phases of the project. Therefore the analysis presented below will also be based on the analysis of risks in the phases (Trocki, 2012).

As a reminder in the case of the phase model we distinguish 4 phases: initiation, planning, implementation and termination.

In the initiation phase we can therefore distinguish the following risks: inaccurate specification of customer requirements, lack of accurate feasibility analysis, poor budget planning, selection of incompetent project manager and team members.

In the planning phase we can therefore distinguish the following risks: project manager without support from above, poor motivation of team members, poor structure of work division, poorly developed project schedule, poorly executed plan of resources and their availability, poor execution technology, poor selection criteria of subcontractors

Thus, in the implementation phase we can distinguish the following risks: lack of communication between the team, lack of methodology for introducing and handling changes, project manager focused on his own goals instead of project goals, lack of an early warning system, Delays in delivery, lack of quality supervision, poor cost control in relation to the schedule and work progress (Lock, 2013; Prince2tm, 2009).

In the completion phase we can distinguish the following risks: lack of effective supervision of the removal of defects, too early release of resources, lack of complete documentation, delayed acceptance by the customer, lack of documentation of the project experience.

During project implementation it is often the case that risk management is only triggered when a risk actually occurs or can be foreseen. It is then used as crisis management – when it is already too late. Risk analysis and management should be undertaken before the start of a project and should be considered throughout the project process.

For IPMA we can distinguish two approaches to risk analysis:

- Quantitative analysis – determines the numerical (monetary) values of the probability and consequences of the occurrence of individual risks, as well as the risk of the whole project, and operates on monetary values.
- Qualitative analysis – consists of assessing the probability and impact of the identified risks, used for initial risk estimation or when it is not possible to quantify it precisely.

For both methodologies different risk management strategies are used as shown in Table 1.

Transfer – is the transfer of responsibility or consequences associated with a given risk to another group of stakeholders; risk transfer rarely leads to risk elimination, but rather forces others to mitigate, accept or avoid it; risks can be transferred to contractors, suppliers, customers or insurers.

Avoidance – involves changing the project plan to eliminate the risk or related conditions or to protect the project objectives from the possible consequences of the risk.

Table 1. Risk Management Strategies

Risk as	Chance	Avoidance Minimalization Active acceptance Passive acceptance
	Danger	Utilization Strengthening Sharing up Acceptance

Source: (prepared by author).

Passive acceptance – consists of accepting the risk without taking any action other than documenting it.

Active acceptance – consists of creating a retreat plan to be implemented when the risk event occurs. The turnaround plan includes detailed instructions on how to proceed and how to make a budget provision for the project.

Reducing – involves selecting solutions with less risk than others. It is accepted because it involves potentially less adverse conditions. This strategy involves reducing the probability and/or consequences of an adverse event to an acceptable level. Taking timely action to reduce the probability or consequences of risks is preferable to fixing them (Kerzner, 2001; Prince2tm, 2009).

The risk management plan as in PRINCE2 methodology contains some common elements. In the case of IPMA, the Project Manager is responsible for this plan.

The basic Risk Management Plan consists of:

1) Introduction

Project description 3.

3) Risk management strategies and methods

4. organisation

5. Risk management processes and procedures

6. Risk management planning

7. risk analysis and assessment

8. risk response plan

9. risk monitoring

10. documentation and reporting

A very important aspect for each organisation is to take an individual approach and choose the right methodology for its own needs. When managing risks it is essential to know the tools and nomenclature, which in turn allow the communication process to be improved throughout the organisation (Wyrozębski P., Jachniewicz M., Metelski W., 2012).

5. A PRACTICAL APPROACH TO RISK MANAGEMENT IN THE ORGANIZATION

After an in-depth analysis of both methodologies each organisation has to reflect on and decide which is the most appropriate for their organisation and which tools their employees will want to work with on a daily basis.

The risk register (risk log) should be based on the analysis of the types, consequences and criticality of errors in identifying all potential risks:

- Each risk listed is assigned an identification number;
- space is left for the entry of the individual action steps to be taken in case of risk occurrence.

An example of a risk register that can be used in an organisation is summarised in Table 2.

Table 2. An example of risk register

Risk category	Risk	Probability of occurrence (L)	Effect (E)	Value V=L*E	Strategy

Source: (prepared by the author).

The risk register, risk analysis should be reviewed regularly and corrected throughout the project. It is also very important to appoint a person responsible for carrying out the risk register, so that there is no double analysis or lack thereof.

The table presented above can be adapted to different types of organisations and modified according to the needs.

The risk analysis was carried out on the basis of one project in the automotive industry.

The case concerns the introduction of a new type of component for a selected customer X. The component has to be introduced due to technological and construction problems as well as due to the lack of efficiency of the customer's flow, not achieving the required quantities. An additional factor is that the price of the new component will be approx. 15% lower than previously, plus a reduction in costs for special transports.

6. CONCLUSIONS AND DIRECTIONS OF FURTHER RESEARCHES

Regardless of the project management method chosen, the traditional approach distinguishes between risk management models and processes that are an integral part of them. While the methods themselves are different, the associated risk management processes have no significant differences. They share similar or even the same tools, techniques for identifying, assessing and even responding to risks.

In hard-core projects (PRINCE2, IPMA), although there are risk management processes divided into strategic project management (which emphasises day-to-day activity, risk response and risk management), and teamwork (where risks are identified, analysed and assessed in an iterative approach), the process itself does not address the critical success factors that contribute to potential threats or opportunities in these types of projects.

Each organisation wishing to manage in a project-based manner should individually select a methodology for itself and apply it to all process levels. It seems necessary for all members of project teams to know theoretical basics and to develop one reporting standard.

Some tools from PRINCE2 or IPMA can be directly implemented in an organisation. Therefore, it is worth getting to know both methodologies and using them successfully to improve your organization and to increase work effectiveness and efficiency.

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METHOD OF PREDICTING FAVOURABLE INDUSTRIAL PRODUCTS

Predicting favourable products is still challenging. It is influenced by dynamic customers' requirement changes and reduction of waste. An important problem is a simultaneous combination of customer satisfaction with environmental aspects. It resulted from a need to reduce the harmfulness of products and increasing the quality level of these products. Therefore, the aim is to propose a method to predict favourable products considering qualitative and environmental aspects. The method relies on predicting which product will be the most favourable for customer, and simultaneously will be the most environmentally friendly. Due to the uncertainty of decisions, the Grey Relational Analysis (GRA) was implemented in the proposed method. The GRA method is effective to any number of data, therefore the proposed method does not have limitations in numbers of qualitative and environmental criteria. The test was carried out based on harmful industrial products. It was fluorescent penetrants used in popular non-destructive testing.

Keywords: predict, GRA, quality, mechanical engineering, production engineering, decisions, sustainability.

1. INTRODUCTION

Sustainable development of products is one of the key enterprise actions. It relies on customizing the product to customers' expectations in a pro-environmental context (Mentel, Hajduk-Stelmachowicz, 2020; Ulewicz, Kleszcz, Ulewicz, 2021; Pacana, Siwiec, Bednarova, 2020; Siwiec, Pacana, 2021). In this aim, the organizations are looking for different solutions. Based on customers' requirements the new products are designed or existing products are modified (Okrah, Hajduk-Stelmachowicz, 2020; Siwiec, Pacana, 2021). For example, the popular House of Quality (HoQ) is used for it (Lee et al., 2019; Shi, Peng, 2020). Additionally, for the purpose to reduce inconsistencies in customer requirements the techniques with fuzzy Saaty scale are used. These methods were e.g.: Fuzzy Analytic Hierarchy Process (FAHP), or Fuzzy Technique for Order Preference By Similarity To Ideal Solution (FTOPSIS) (Ulewicz, Siwiec, Pacana, Tutak, Brodny, 2021; Siwiec, Bednarova, Pacana, 2020). However, these actions are still not enough. It has

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resulted from dynamic customer requirement changes and not beneficial climate changes (Hajduk-Stelmachowicz, 2017). Therefore, it is necessary to design the products in advance. The design should allow predicting expectation quality product level with simultaneously considering impact product on the environment (Siwiec, Pacana, 2021). Although quality of products and impact of products on the environment were predicted, these two aspects in a single method were not combined. Integration of qualitative and environmental aspects will be allowed to predict product which is expected by customers and environmentally friendly (Siwiec, Pacana, 2021; Siwiec, Bednarova, Pacana, Zawada, Rusko, 2019). These pro-environmental actions reduce waste and also are consistent with the idea of continuous product improvement. Therefore, the aim is to propose a method to predict favourable products considering qualitative and environmental aspects. The method is based on predicting which product will be the most beneficial for the customer and at the same time will have the least negative impact on the environment. The method relies on double apply Grey Relational Analysis (GRA) (Wang et al., 2015) to allow verification of any number of criteria (even four data). Test of the method was done for industrial products using in product quality controls.

2. METHOD

The method was to twice use the Grey Relational Analysis (GRA) (Ertugrul et al., 2016) to predict the most favourable quality product level which is environmentally friendly. The concept of the method relies on predicting the most favourable product considering qualitative-environmental criteria. The algorithm of the proposed method is presented in Figure 1.

The method stages in the next part of the study were characterized.

2.1. Selecting of products

The selection of products results from the entity's need who use this method. The number and kind of product are unlimited. The selection of products may have an effect e.g. product life cycle, or company' opinions.

2.2. Determining of aim

The aim should be to predict a satisfactory product. The satisfaction relates to achieving the expected product quality level, and this product will be environmentally friendly. To determine the aim it is useful to use the SMART method (Specific, Measurable, Achievable, Relevant, Time-bound) (Lawlor, Hornyak, 2012).

2.3. Selecting of criteria

The selection of criteria results from the needs of entity using the proposed method. Based on this, the product quality level considering environmental aspects will be determined. Therefore, the qualitative and environmental aspects should be selected. The qualitative criteria determine the product e.g. in the context of its use. The environmental criteria are criteria that characterize the product in turn of its impact on the environment. A total number of criteria (qualitative and environmental) should be equal to the maximum of 8 criteria (Mu, Pereyra-Rojas, 2017). The criteria should be selected during brainstorm (BM) and based on the product catalog (Jiao, Chen, 2006; Rossiter, Lilien, 1994; Siwiec, Pacana, 2021).

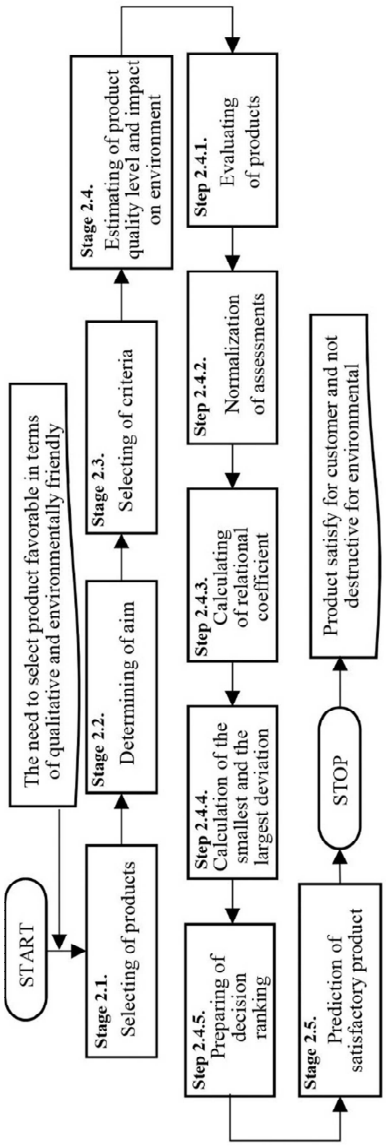

Figure 1. Algorithm of proposed method to predict satisfaction industrial products

Source: Own study.

2.4. Estimating of product quality level and impact on environment

The quality product level and its impact on the environment are estimating by Grey Relational Analysis (GRA) (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015). The choice of the GRA method resulted from its efficiency to predict the quality level and analyze in an uncertain (fuzzy) environment. Additionally, the GRA method is effective for the small number of criteria, i.e. even four data. The product quality level is estimating based on qualitative criteria. While the impact of products on the natural environment is estimating based on environmental criteria. It relies on twice apply the GRA method, i.e. separately for quality level and impact of product on the environment. This is presented in five main steps.

Step 2.4.1. Evaluating of products

The evaluation of products is realized in two decision matrices (M). In the first matrix M, the products are evaluating based on qualitative criteria. In the second matrix M, the products are evaluating based on environmental criteria. For this purpose the formula (1) is used (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015):

$$\mathrm{M} = \mathrm{m_i} \times \mathrm{n_j} \tag{1}$$

where: m – product, n – criterion, i, j – 1, 2, …, n.

The matrices are filled by assessments from 1 to 5, where 5 – the most favourable product for a given criterion, 1 – the least favourable product for a given criterion.

Step 2.4.2. Normalization of assessments

The normalization of assessments relies on the transformation of assessments from M matrix to values in the range from 0 to 1. For assessments of product qualitative criteria, formula (2) is used, because the higher the rating, the more favourable the criterion is in terms of the product quality level. In turn, for assessments of environmental criteria, formula (3) is used, because the lower the rating, the lower the environmental impact (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015):

$$\mathrm{x_i^*(k)} = \frac{\mathrm{x_i^{(O)}(k)} - \min \mathrm{x_i^{(O)}(k)}}{\max \mathrm{x_i^{(O)}(k)} - \min \mathrm{x_i^{(O)}(k)}} \tag{2}$$

$$\mathrm{x_i^*(k)} = \frac{\max \mathrm{x_i^{(0)}(k)} - \mathrm{x_i^{(0)}(k)}}{\max \mathrm{x_i^{(0)}(k)} - \min \mathrm{x_i^{(0)}(k)}} \tag{3}$$

where: $x_0^{(O)}(k)$ – original sequence, $x_i^{(O)}(k)$ – comparison sequence, $i = 1, 2, \ldots, m$; $k = 1, 2, \ldots, n$; m – alternative (i.e. product), n – criterion.

Step 2.4.3. Calculating of relational coefficient

The third step is calculating of Grey relational coefficient. This coefficient is calculated separately for qualitative and environmental criteria. For this purpose, the formula (4) is used (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015):

$$\gamma[x_0^*(k), x_i^*(k)] = \frac{\Delta_{min} + \xi\Delta_{max}}{\Delta_{0i}(k) + \xi\Delta_{max}}, \quad 0 < \gamma[x_0^*(k), x_i^*(k)] \leq 1$$
$$\Delta_{0i}(k) = |x_0^*(k) - x_i^*(k)| \tag{4}$$

where: $\Delta_{0i}(k)$ – sequence of deviations between original sequence $x_0^*(k)$ and comparison sequence $x_i^*(k)$.

In turn, the coefficient $\boldsymbol{\xi}$ from formula (2) has value [0, 1]. Most often it is assumed that $\boldsymbol{\xi}$ = 0.5 (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015).

Step 2.4.4. Calculation of the smallest and the largest deviation

The smallest and the largest deviation are calculated for relational coefficient values for qualitative and environmental criteria. The smallest deviation is calculated from formula (5), while the largest deviation is calculated from formula (6) (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015):

$$\Delta_{max} = \max_{\forall j \in i} \max_{\forall k} |x_0^*(k) - x_j^*(k)| \tag{5}$$

$$\Delta_{min} = \min_{\forall j \in i} \min_{\forall k} |x_0^*(k) - x_j^*(k)| \tag{6}$$

Step 2.4.5. Preparing of decision ranking

According to the GRA method, product quality level and its impact on the natural environment are estimating based on grey relation assessment. It is necessary to separately estimate the product quality level and its impact on the environment. In this aim, the weighted sum of Grey coefficients is estimating by formula (7) (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015):

$$\gamma(x_0^*, x_i^*) = \sum_{k=i}^{n} \beta_k \gamma[x_0^*(k), x_i^*(k)], \quad \text{where: } \gamma(x_0^*, x_i^*) = q_i \tag{7}$$

where: q – product quality level or impact of product on natural environment, i – 1, 2, ..., n.

The sum of product quality level values or impact on the natural environment should be equal to 1 (8) (Ertugrul et al., 2016; Javed et al., 2019; Wang et al., 2015):

$$\sum_{k=1}^{n} \beta_k = 1 \tag{8}$$

where: $\gamma(x_0^*, x_i^*)$ – grey relational assessment, i.e. correlation level between original and comparison sequence.

Consequently, two ranks are obtained. The first ranking is determining product quality level considering qualitative criteria. The maximum value is the first position in the ranking, i.e. the product the most satisfied in terms of quality. The second ranking is determining the impact of products on the environment considering environmental criteria. The maximum value is the first position in the ranking, i.e. the product the most negative (harmful) for the

environment. The minimum value is the last position in the ranking, i.e. the product the least negative (harmful) for the environment.

2.5. Prediction of satisfactory product

At this stage of the method, the satisfactory product is predicted, i.e. the product the most favourable by qualitative and environmentally friendly. The most favourable product has the first position in qualitative criteria ranking and the first position in environmental criteria ranking.

3. RESULTS AND DISCUSSION

Test of the method was carried out based on fluorescent penetrants using in popular non-destructive testing (NDT). These penetrants were used in one of the Podkarpacie enterprises to control products from the aviation and motorize industries. In the enterprise, important was to achieve customers' satisfaction by simultaneously reduce harmful of these products on natural environment. Therefore, it was considered justified to apply the proposed method.

According to first stage of the method, the products to verify were selected. There were six penetrant from brands: Magnaflux, Chemetall, and Sherwin, which was using to test quality of product. The characteristic of products were presented in publicly available safety data sheets for these products. To test of the method these penetrants were marked randomly and conventionally from P1 to P6.

Next, in second stage of the method, the aim of the analysis was determined. The purpose was to predict satisfactory fluorescent penetrant to achieve product with expected quality level and environmentally friendly.

Then, as indicated in third step, the qualitative and environmental criteria of penetrants were selected. The criteria were selected during brainstorm and based on product catalogue. The qualitative criteria were: sensitivity level, drying time after penetration, density and viscosity. However, the environmental criteria were: health, rafined oil, reactivity and flash-point.

According to fourth stage of the method, the penetrant quality level and their impact on environment were estimated. The Grey Relational Analysis (GRA) was used for it. In the first stage, fluorescent penetrants were separetly assessmented in turn of qualitative and eivornmental criteria. For that two M matrices were prepared (Table 1).

Following from second step of the method, assessments from qualitative and environmental criteria form M matrices were normalized. The formulas (2–3) were used for that. Results are shown in Table 2.

Then, according to third stage of the method, the Grey Relational Coefficient were calculated. It was assumed coefficient equal to $\xi = 0.5$. Next, in fourth stage, the minimum and maximum deviation were calculated. These calculation were based on values of relational coefficient for qualitative end environmental criteria. Results is shown in Table 3.

In fifth step of the method, two rankings for qualitative and environmental criteria were created. The first ranking determines the product quality level considering qualitive criteria. The second ranking determines the impact of product on environmental considering environmental criteria. Results are shown in Table 4.

Table 1. Matrix of qualitative and environmental criteria

Qualitative criteria		Sensitivity level	Drying time after penetration	Density	Viscosity
product	P1	5	4	3	3
	P2	4	4	3	4
	P3	4	4	4	3
	P4	4	3	2	2
	P5	3	2	3	2
	P6	3	4	3	3
Environmental criteria		Health	Rafined oil	Reactivity	Flash-point
product	P1	3	2	3	4
	P2	3	2	2	3
	P3	2	1	2	3
	P4	3	2	3	3
	P5	3	2	2	4
	P6	2	1	1	2

Source: Own study.

Table 2. Normalized assessments of qualitative and environmental criteria

Qualitative criteria		Sensitivity level	Drying time after penetration	Density	Viscosity
product	P1	1,00	1,00	0,50	0,50
	P2	0,50	1,00	0,50	1,00
	P3	0,50	1,00	1,00	0,50
	P4	0,50	0,50	0,00	0,00
	P5	0,00	0,00	0,50	0,00
	P6	0,00	1,00	0,50	0,50
Environmental criteria		Health	Rafined oil	Reactivity	Flash-point
product	P1	1,00	1,00	1,00	1,00
	P2	1,00	1,00	0,50	0,50
	P3	0,00	0,00	0,50	0,50
	P4	1,00	1,00	1,00	0,50
	P5	1,00	1,00	0,50	1,00
	P6	0,00	0,00	0,00	0,00

Source: Own study.

Table 3. Relational coefficient values for qualitative end environmental criteria

Qualitative criteria		Sensitivity level	Drying time after penetration	Density	Viscosity
product	P1	1,00	1,00	0,50	0,50
	P2	0,50	1,00	0,50	1,00
	P3	0,50	1,00	1,00	0,50
	P4	0,50	0,50	0,33	0,33
	P5	0,33	0,33	0,50	0,33
	P6	0,33	1,00	0,50	0,50
Environmental criteria		Health	Rafined oil	Reactivity	Flash-point
product	P1	1,00	1,00	1,00	1,00
	P2	1,00	1,00	0,50	0,50
	P3	0,33	0,33	0,50	0,50
	P4	1,00	1,00	1,00	0,50
	P5	1,00	1,00	0,50	1,00
	P6	0,33	0,33	0,33	0,33

Source: Own study.

Table 4. Result of used the GRA method to determine qualitative and environmental criteria

Products	Qualitative criteria – ranking		Environmental criteria – ranking	
P1	0,75	1	1,00	5
P2	0,75	1	0,75	3
P3	0,75	1	0,42	2
P4	0,42	3	0,88	4
P5	0,38	4	0,88	4
P6	0,58	2	0,33	1

Source: Own study.

On this stage it was concluded, the most favourable quality product level has three penetrants P1, P2, P3, which quality level on 0.75 level were determined. Although, in the context of impact these penetrans on environmental it was shown, that the most favourable is P6 penetrant. The most favourable was penetrant P6, because this penetrant has second place in ranking of qualitative criteria and the first place in ranking of environmental criteria. Accordance with ranking it is possible to predict of satisfaction from other penetrants. Therefore, the last choice of penetrant depends on entity using of the proposed method.

4. CONCLUSIONS

Sustainability development of products still is challenge. In this context the enterprises are tried to achieve customers' expectations by improvement existing products. Hence, in the era of unfavourable climate changes it is important also considering environmental

aspects. Mainly problem is predicting of expected changes in products and impact of these changes on environment. Therefore, important is looking for different instruments supporting this process. Therefore, the aim was to propose a method to predict favourable products considering qualitative and environmental aspects. The method has relied on predicting which of product is the best for customers and simultaneously is friendly for environmental. The method was designed in the five main stages. Additionally, in the proposed method, the Grey Relational Analysis (GRA) was implemented, which is effective in a fuzzy (uncertain) decision environment. The method was tested based on harmful fluorescent penetrants. These products were used in popular non-destructive testing (NDT) in quality control. The six penetrants were analyzed. The penetrants based on qualitative and environmental criteria were verified. The qualitative criteria were: sensitivity level, drying time after penetration, density and viscosity. However, the environmental criteria were: health, rafined oil, reactivity and flash-point. After double applied Grey Relational Analysis it was possible to predict the most beneficial industrial product. It was product about favourable quality level and simultaneously the most favourable for the environment. It was shown the effectiveness of the method to predict beneficial qualitative-environmental decisions for industrial products. Hence, this method can be applied for any product, which prediction quality level considering environmental aspects is necessary.

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